AUGUST 15, 1959
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TELEPHONE ENGINEER & MANAGEMENT

the telephone industry magazine

TELEPHONE ENGINEER & MANAGEMENT 50th ANNIVERSARY 1909 1959 THE TELEPHONE INDUSTRY MAGAZINE

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AUG 19 1959
DETROIT

A GROWING RURAL SERVICE PROBLEM, by Bill Corman

Part II: "The Coming Revolution," by C. D. Ehinger

"TRAFFIC LIGHTS," by D. A. Perigo

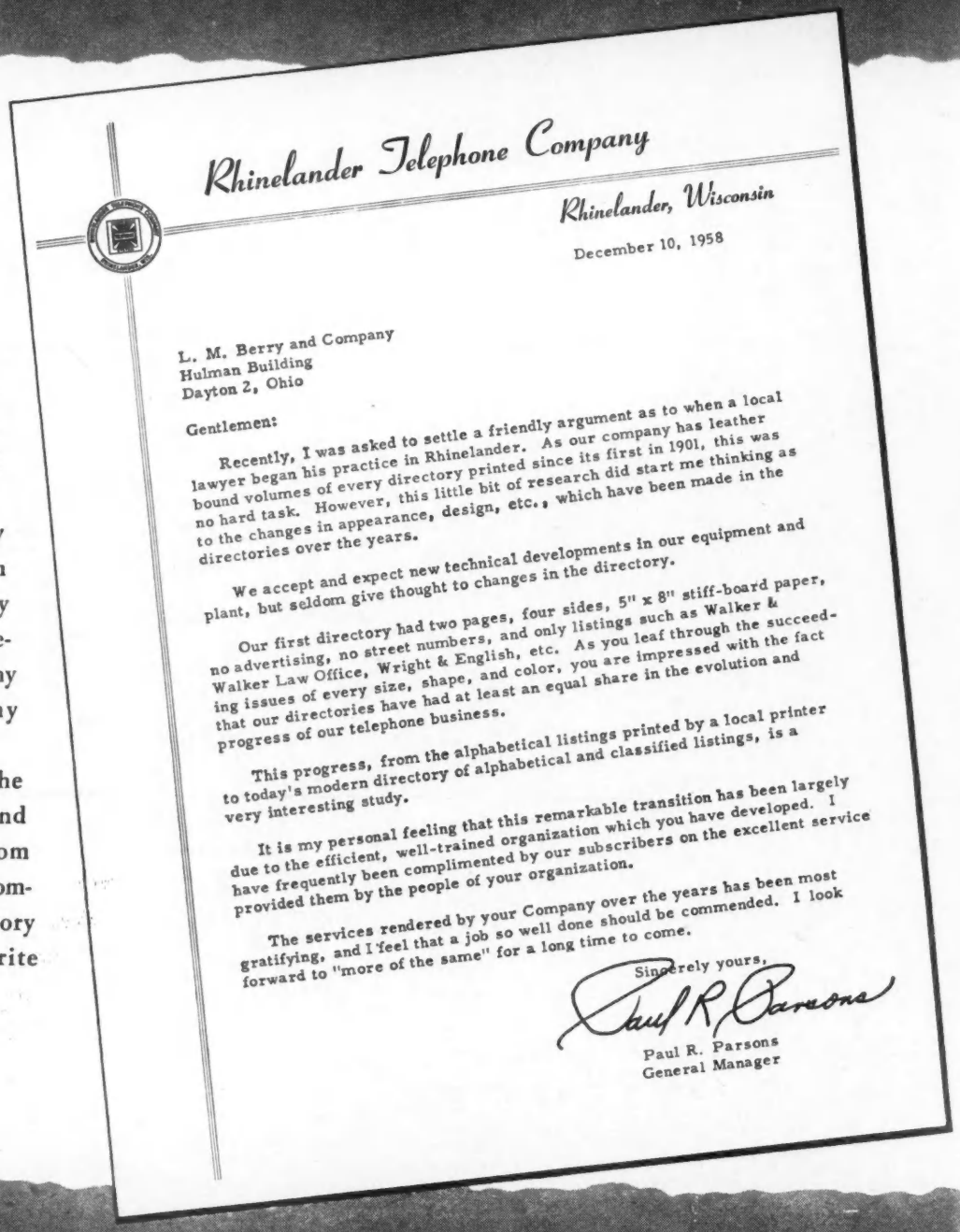
Subscriber Carrier Systems, by John S. Reed

take our CUSTOMERS word for it-

Customer satisfaction is one reason why L. M. Berry and Company has successfully enjoyed the association of leading Telephone Companies throughout the United States for 49 years.

Since 1937, L. M. Berry and Company has been handling the Directory Advertising for the Rhinelander Telephone Company ... one of Berry's many satisfied customers.

You, too, can enjoy the numerous advantages and added profit derived from having L. M. Berry and Company handle your Directory Advertising. Call or write today.



Rhinelander Telephone Company

Rhinelander, Wisconsin

December 10, 1958

L. M. Berry and Company
Hulman Building
Dayton 2, Ohio

Gentlemen:

Recently, I was asked to settle a friendly argument as to when a local lawyer began his practice in Rhinelander. As our company has leather bound volumes of every directory printed since its first in 1901, this was no hard task. However, this little bit of research did start me thinking as to the changes in appearance, design, etc., which have been made in the directories over the years.

We accept and expect new technical developments in our equipment and plant, but seldom give thought to changes in the directory.

Our first directory had two pages, four sides, 5" x 8" stiff-board paper, no advertising, no street numbers, and only listings such as Walker & Walker Law Office, Wright & English, etc. As you leaf through the succeeding issues of every size, shape, and color, you are impressed with the fact that our directories have had at least an equal share in the evolution and progress of our telephone business.

This progress, from the alphabetical listings printed by a local printer to today's modern directory of alphabetical and classified listings, is a very interesting study.

It is my personal feeling that this remarkable transition has been largely due to the efficient, well-trained organization which you have developed. I have frequently been complimented by our subscribers on the excellent service provided them by the people of your organization.

The services rendered by your Company over the years has been most gratifying, and I feel that a job so well done should be commended. I look forward to "more of the same" for a long time to come.

Sincerely yours,

Paul R. Parsons

Paul R. Parsons
General Manager

Since 1910

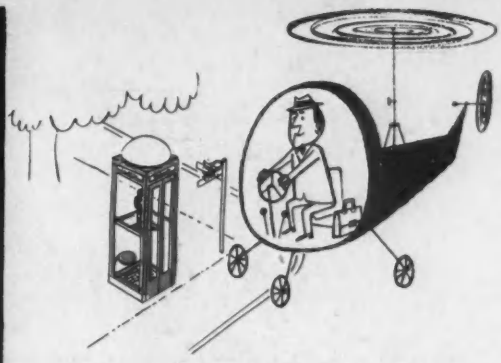
L. M. BERRY

AND COMPANY

Hulman Building • Dayton 2, Ohio • BAldwin 4-7421

TELEPHONE DIRECTORY ADVERTISING EXCLUSIVELY

why TIDEWATER TELEPHONE CO. ...along with thousands of Independents all over America... uses SHERRON STEEL BOOTHS



It's a well known fact that the presence or accessibility of a paystation promotes spur-of-the-moment phone calls. And it's an equally well established fact that when the paystation is in a Sherron steel booth, the passerby is more readily influenced to make the call.

The Tidewater Telephone Company's awareness of both facts accounts for its choice of Sherron steel booths . . . for strategic locations in its operating area.

Colorful, always new looking . . . Sherron steel booths invite paystation patronage always . . . rain or shine. As rigid, solidly built structures, they afford complete protection at all times. REA and UL approved. (Shown here is the Sherron Model 17S-Type 7 in Hunter Green.)

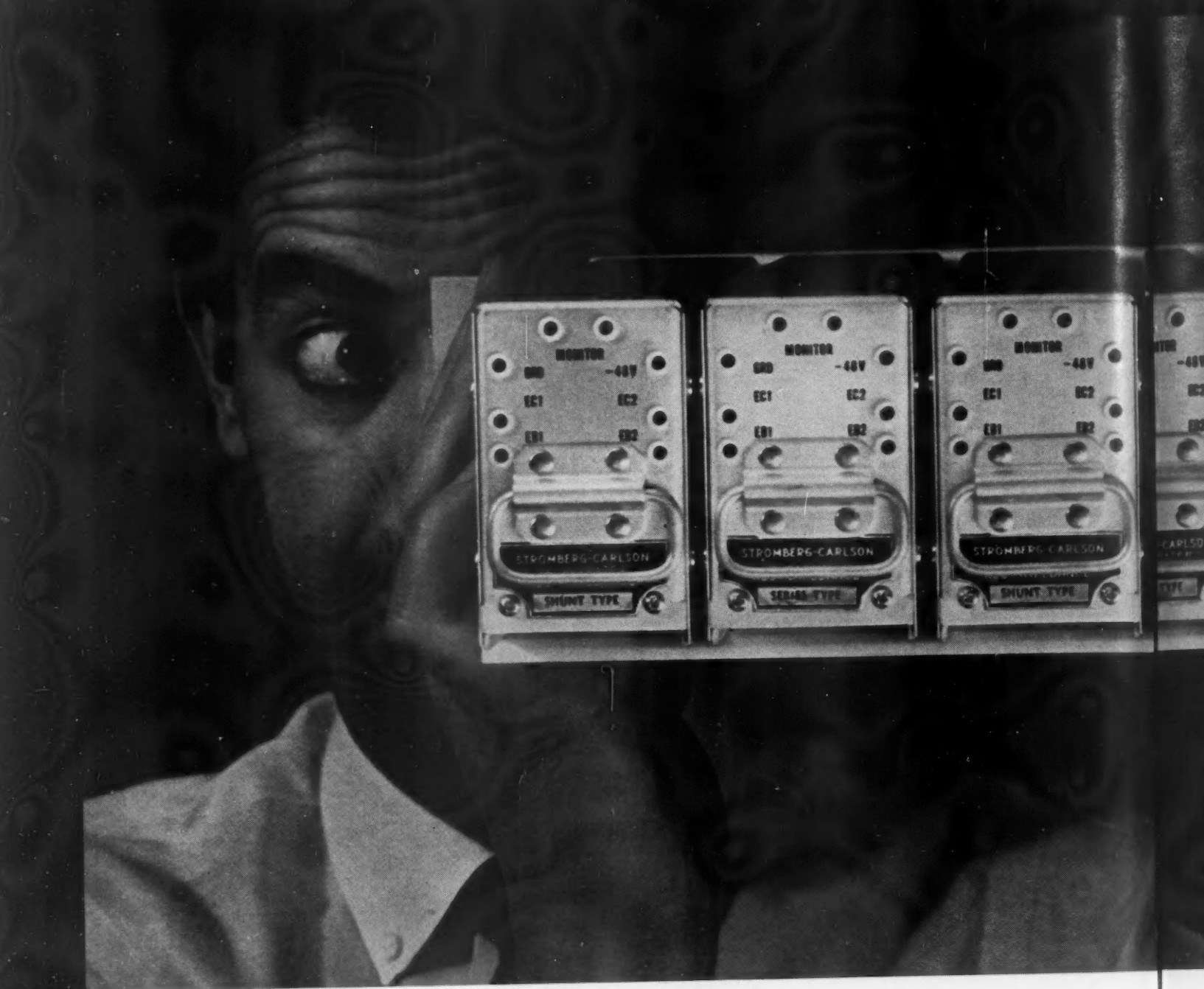
SEE OUR CATALOG IN SWEET'S

INDEPENDENT

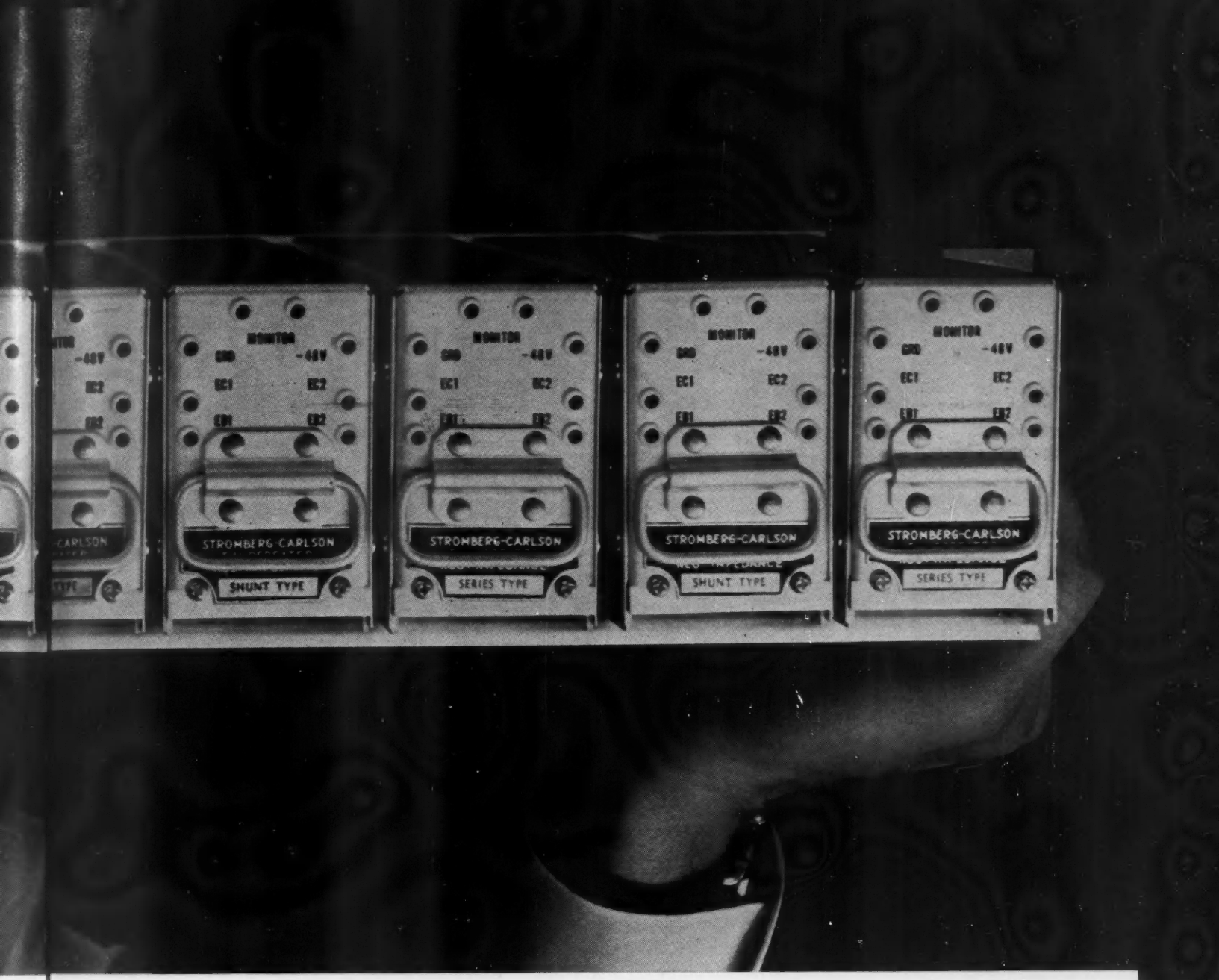
Sherron ACOUSTIC SEE-THRU STEEL—STAINLESS STEEL OUTDOOR AND INDOOR TELEPHONE BOOTHS

There's a Sherron booth for every location and budget in either zinc coated, cold rolled or stainless steel.

SHERRON METALLIC CORP., 1201 FLUSHING AVE., BROOKLYN 37, N.Y.



More decibels per dollar...



Stromberg-Carlson "541" Negative Impedance Repeaters

On trunks and long lines, these 100% transistorized voice frequency repeaters provide vastly improved transmission where older methods are too costly.

With "541" Repeaters you reduce the need for expensive cable loading. Where you're already using cable loading, they provide still greater transmission gain. In new installations you get extra savings by using smaller gauge cable or wire.

Compact "541" Repeaters are available in series and shunt types and work directly off 48-volt Central Office battery—no additional power supply required. A standard 19" shelf mounts 8 repeaters and takes only 3½" of vertical rack space.

Contact the Stromberg-Carlson representative in your area for full technical details, prices and ordering information.

STROMBERG-CARLSON

A DIVISION OF **GENERAL DYNAMICS CORPORATION**

ATLANTA: TRinity 5-7467 • **CHICAGO:** STate 2-4235 • **KANSAS CITY:** HArrison 1-6618 • **ROCHESTER:** HUbbard 2-2200 • **SAN FRANCISCO:** OXford 7-3630

NEW, SHORT *Koiled Kords**

CUT HANDSET LOSSES . . . on Coin Collector Telephones

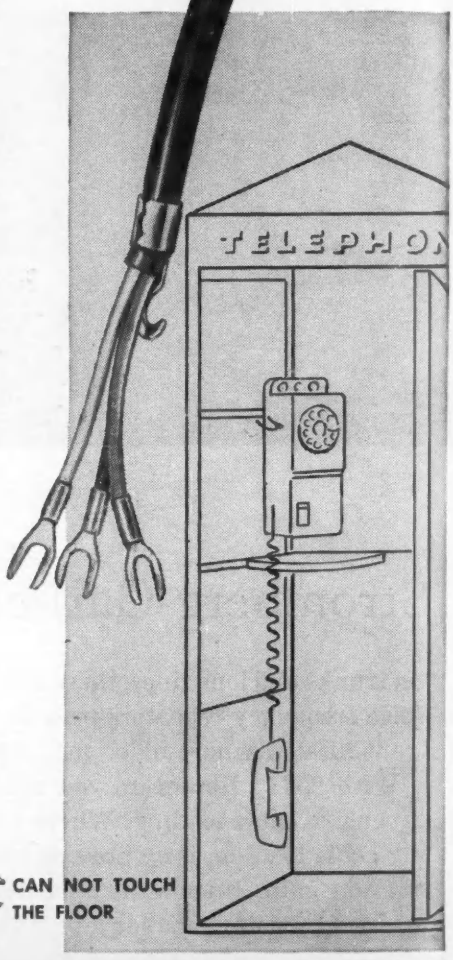
KOILED KORD ILLUSTRATED IS ACTUAL SIZE

These new short KOILED KORDS retractile cords allow sufficient length for use in telephone booths but are short enough to prevent the handset from hitting the floor if dropped.

Figure your past losses from broken handsets and you'll see how much these new short KOILED KORDS can save you.

These new short KOILED KORDS are available for Automatic Electric, Kellogg, Stromberg-Carlson and Western Electric handsets.

KOILED KORDS, the original retractile cords, are the result of 17 years of research, development and use.



CAN NOT TOUCH THE FLOOR

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*KOILED KORDS is a trade mark of KOILED KORDS, INC.

Koiled Kords INCORPORATED, BOX K, NEW HAVEN 14, CONN.

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AUGUST 15, 1959

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FRONT COVER

Front cover photo shows telephone engineers who attended USITA sponsored Telephone Engineering Conference at Michigan State University, Lansing, June 28-July 17. (For complete story see page 99)

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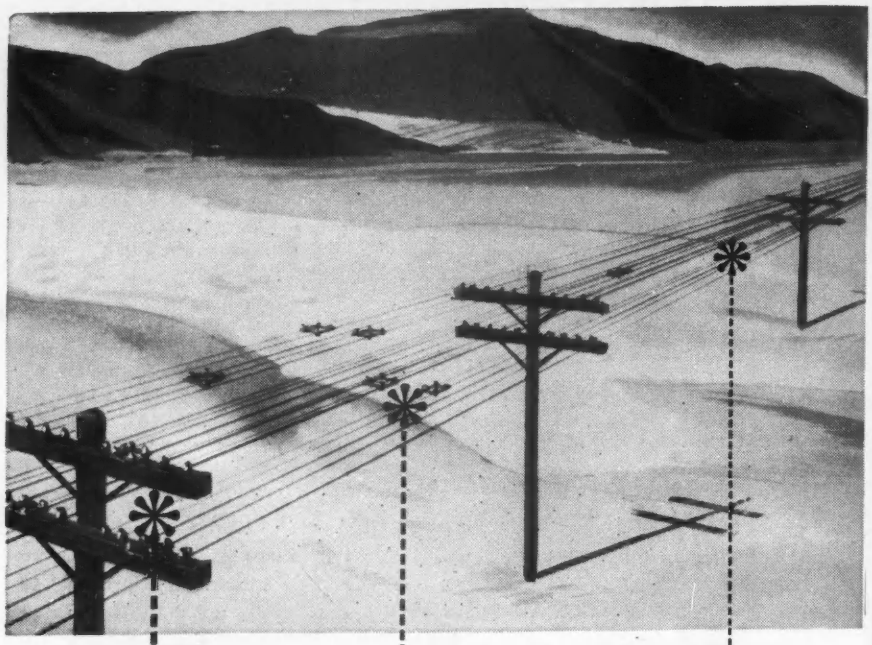


CASE after CASE after CASE

Case

TRANSPOSITION BRACKETS

proved best...world wide

Transposing wires to help expand toll circuits, carrier systems, balance out cross-talk and reduce noise levels has proven itself, installation after installation, throughout the world.

Case aluminum Transposition Brackets for cross-arm and span-point transpositions have proved to be the outstanding choice.

● **Unique span-point design**... the only bracket designed especially for mid-span transpositions... eliminates the need for special transposition poles.

● **Lightweight**... Case non-corrosive aluminum cross-arm brackets weigh only 4 lbs.*; the span-point bracket weighs only 3½ lbs.*

*(including insulators and bushings)

● **Roller system**... Case brackets feature insulators that roll, eliminate wire dragging on insulators and bracket distortion, protect wire insulation in stringing.

● **Special rubber bushings**... In the event of glass insulator breakage, the line wire falls on the rubber bushing, with no loss of communication service.

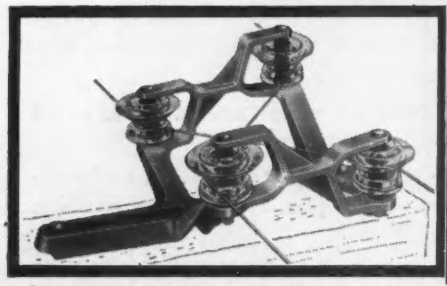
SOLD BY LEADING DISTRIBUTORS IN THE U. S.

CASE BRACKETS... STRONG, LONG-LASTING, ECONOMICAL, ESPECIALLY ADAPTED FOR CARRIER-CIRCUIT CONSTRUCTION

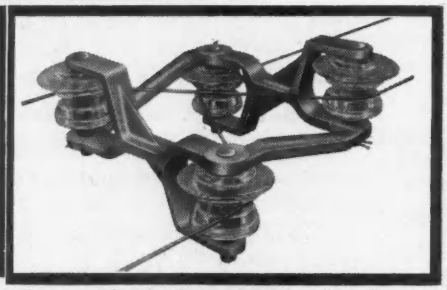
Write today for free illustrated brochure.

TRANSANDEAN ASSOCIATES, INC.

30 MAIN STREET, ORANGE, NEW JERSEY



Case cross-arm transposition bracket



Case mid-span transposition bracket

coming

CONVENTIONS

TENNESSEE Telephone Association, Hermitage Hotel, Nashville, Tennessee, Sept. 9-10, 1959.

ARKANSAS Telephone Association, Arlington Hotel, Hot Springs, Ark., Sept. 14-15, 1959.

MICHIGAN Telephone Association, Pantlind Hotel, Grand Rapids, Mich., September 16, 17, 1959.

ROCKY MOUNTAIN Tel. Association, Utah Hotel, Salt Lake City, Utah, September 16, 17, 18, 1959.

NEW ENGLAND Tel. Association, Mt. Washington Hotel, Bretton Woods, New Hampshire, Sept. 21, 22, 23, 1959.

WEST VIRGINIA Tel. Association, Blackwater Falls Lodge, Davis, W. Va., Sept. 23, 24.

NEVADA Tel. Association, Stockmen's Hotel, Elko, Nev., Sept. 23, 24, 25, 1959.

NORTH CAROLINA Tel. Association, Carolina Hotel, Pinehurst, N. C., Oct. 4-7.

ALASKA Tel. Association, Westward Hotel, Anchorage, Alaska, Oct. 5, 6, 7.

NATIONAL CONVENTION, Conrad Hilton Hotel, Chicago, Ill., Oct. 11-14.

SOUTH CAROLINA Tel. Assoc., Clemson House, Clemson, S. C., Oct. 25, 26, 27, 1959.

VIRGINIA Tel. Association, Roanoke Hotel, Roanoke, Va., Oct. 29-30.

ALABAMA Tel. Association, Thomas Jefferson Hotel, Birmingham, Ala., Nov. 9-10.

GEORGIA Tel. Association, Dinkler Plaza Hotel, Atlanta, Ga., Nov. 11, 12, 1959.

OKLAHOMA Tel. Association, Skirvin Hotel, Oklahoma City, Nov. 18-19.

FLORIDA Tel. Association, Robert Meyer Hotel, Jacksonville, Fla., Nov. 30, Dec. 1, 1959.

POLE LINE CONSTRUCTION AND MAINTENANCE EQUIPMENT...

Tel-E-Lect Presents the Mechanical Package Series Efficient Two-Man Operation

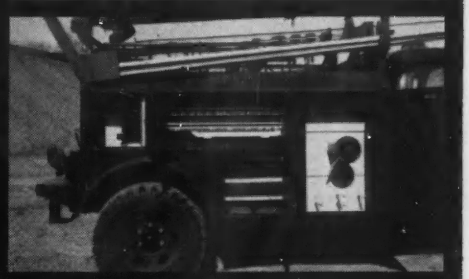
Tel-E-Lect MFP Package... self-storing derrick and double drum winch for live-boom operation and the famed Tel-E-Lect mechanical digger for long years of dependable, trouble free performance.

Working Advantages . . . all the features you need for Pole Line Construction and Maintenance work without the major investment required for hydraulic equipment. Want Proof? Let a Tel-E-Lect field representative survey your requirements, then recommend a Mechanical Package that fits your needs.

Heavy-Duty Derrick . . . has load-lifting capacity up to 8,000 lbs. in 21′ or 23′ sheave heights. Double drum winch provides live boom action at all positions. Derrick is attached to heavy structure of body at the chassis, resulting in maximum stability, greater reach. One lever stores derrick automatically in 30 seconds!

REAR-MOUNTED EQUIPMENT AVAILABLE, ALSO!

Digger Operates from Derrick...and stores with derrick, too! Ideal for fast pole hole digging up to eight feet deep and from 8″ to 24″ in diameter. If preferred, digger can be suspended from winch line.



Body is Versatile, Long-Lasting . . . Tel-E-Lect body with closed or open superstructure, is designed and balanced to provide stable derrick operation. Complete compartmentation for compact storage of tools, materials and supplies.

Remember, Tel-E-Lect Furnishes Complete Operating, Service and Maintenance Information with Every Unit!

TEL-E-LECT
PRODUCTS, INC.

Write today for complete specifications and costs

10001 Minnetonka Blvd.
Minneapolis 26, Minnesota

AUTOMATIC RECORDER-ANNOUNCER

Choose from 5 models—to save money—to make money

TIME ANNOUNCER automatically broadcasts the correct time every 15 seconds with a message between announcements. Some telephone companies use the "between" time for giving public service messages. Others sell it for sponsored commercial messages. Any way you use it, the Automatic Time Announcer is a revenue-builder for you!

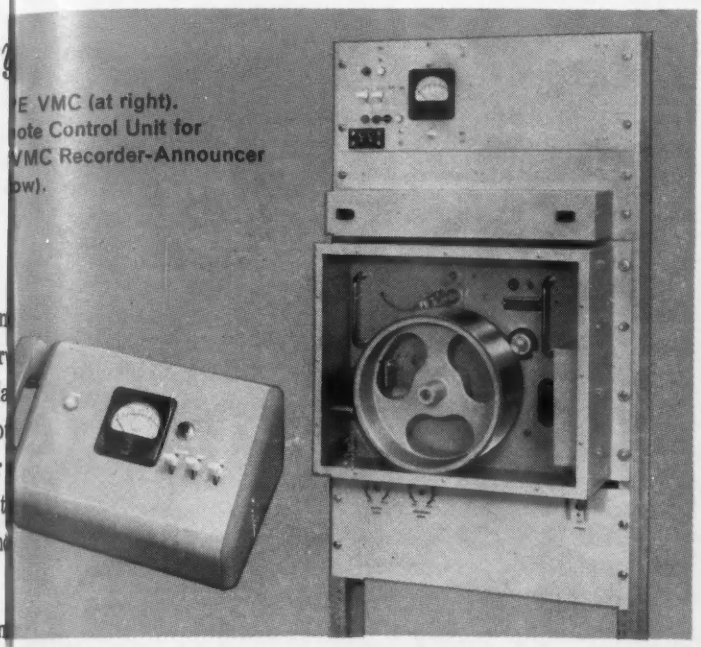
With a Recorder-Announcer, you make in
cept announcements and give public ser
messages, *automatically!* You save on la
costs because operators are relieved for o
duties. And, you can make an announcer
for itself quickly by selling advertising t
to sponsors. Automatic Recorder-Announ
save money, and make money for you.

Automatic Electric offers a complete lin
Recorder-Announcers for giving any typ
message. These precision-engineered
chines use magnetic recorders for lifelik
production. Messages are free from anno
breaks or changes of pitch. Current consu
tion is low, even when an announcer is
continuously.

One or more of the announcers shown
would be ideal for your exchange. For furt
details, write: *Automatic Electric Sales*
poration, Northlake, Illinois. Or call, Fill
5-7111. In Canada, Automatic Electric S
(Canada) Ltd., 185 Bartley Drive, Toronto,

TYPE VMC gives any message up to four minutes long: weather forecasts, paid commercials, public service messages or a combination of any of these. Anyone can record the announcement from anywhere (even from another city by remote control). Old message erased and a new one recorded in one step.

TYPE FML is designed to give a single message (either 6½ or 12 seconds long). Telephone companies use this machine to inform volunteer firemen of the location of a fire. You might also find it useful for announcing theater and train schedules. And, there are a dozen other uses for this Recorder-Announcer.



E VMC (at right).
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VMC Recorder-Announcer
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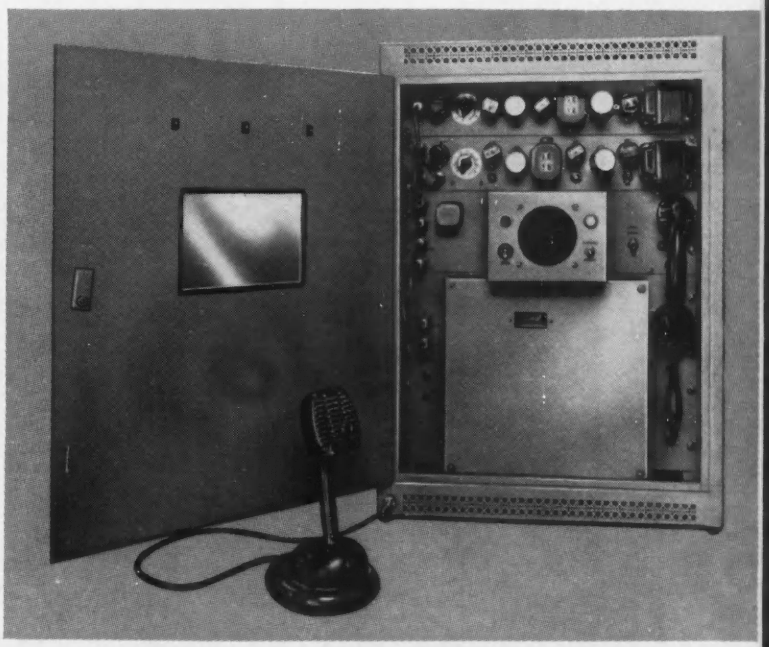
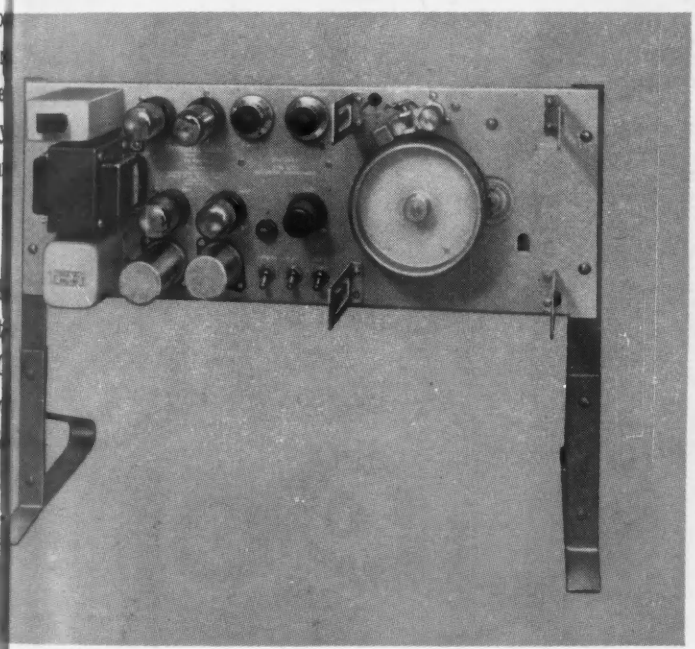
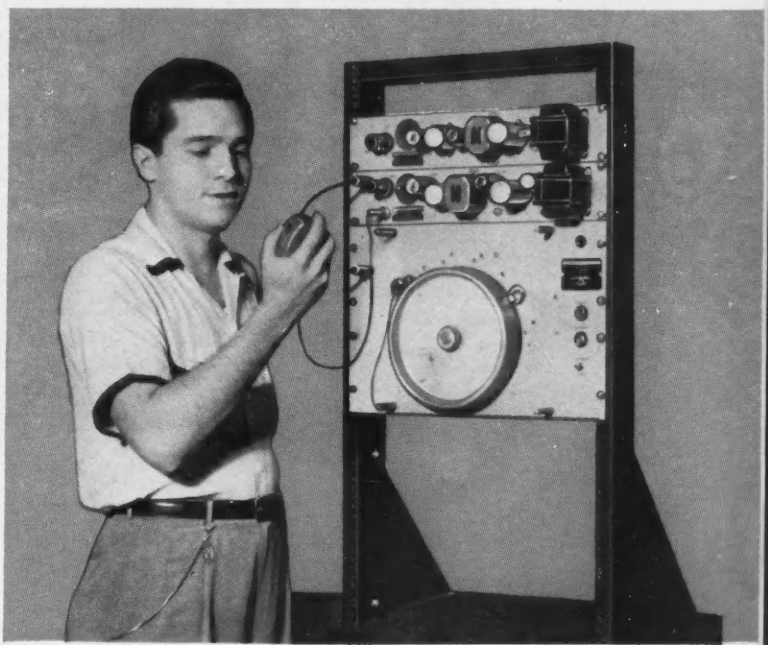






TYPE SCC This compact, low-cost announcer gives any message, 12 seconds long. Ideal for intercept service when only one announcement is needed (or, you can profitably use two SCC machines for two different messages). Can also be used for giving commercial announcements.

TYPE MCF is used for repetitive services such as interception of calls to disconnected lines, dead levels, etc. Provides up to five separate messages. Initially, you buy equipment for only the number of channels you need. Other channels can be added at any time.

AUTOMATIC ELECTRIC

GENERAL SYSTEM

Subsidiary of

GENERAL TELEPHONE & ELECTRONICS

LEE
TELEPHONE
CO.

YOU START SAVING AS SOON AS YOU START INSTALLING

COLOR-CODED ANACONDA ALPETH

The easier and faster you make a lineman's job, the more time and money you save on installation, service and maintenance. This was part of the thinking behind the development of Anaconda Alpeth telephone cable.

Test splicing is costly and time-consuming, and installation test pinholes in polyethylene are almost certain to produce failure in time. Such failures mean costly maintenance.

But—new color-coded Anaconda Alpeth eliminates test splicing and broken insulation, maintaining complete moisture protection, saving installation time and labor.

You get long-range operating advantages too

Every time you add a new station, you get every installation advantage over and over again.

It's versatile. Install Anaconda Alpeth aerially with a messenger, or in underground ducts. It's ideal for rural, suburban, and urban telephone plants.

The longitudinally applied aluminum shield offers you all these extras—a virtually noise-free plastic cable . . . an excellent path to ground for induced lightning and power surges . . . an effective shield from outside interference . . . low electrical resistance . . . provides a shield with electrical characteristics which are virtually unchanged with time.

The high molecular-weight polyethylene jacket gives outstanding aging and weathering characteristics in addition to high moisture- and corrosion-resistance.

These then are some of the reasons why you start saving—and keep saving—as soon as you start installing lightweight Anaconda Alpeth. For more information and full technical data, write to: Anaconda Wire & Cable Company, 25 Broadway, New York, N. Y.

59223

ASK THE MAN FROM

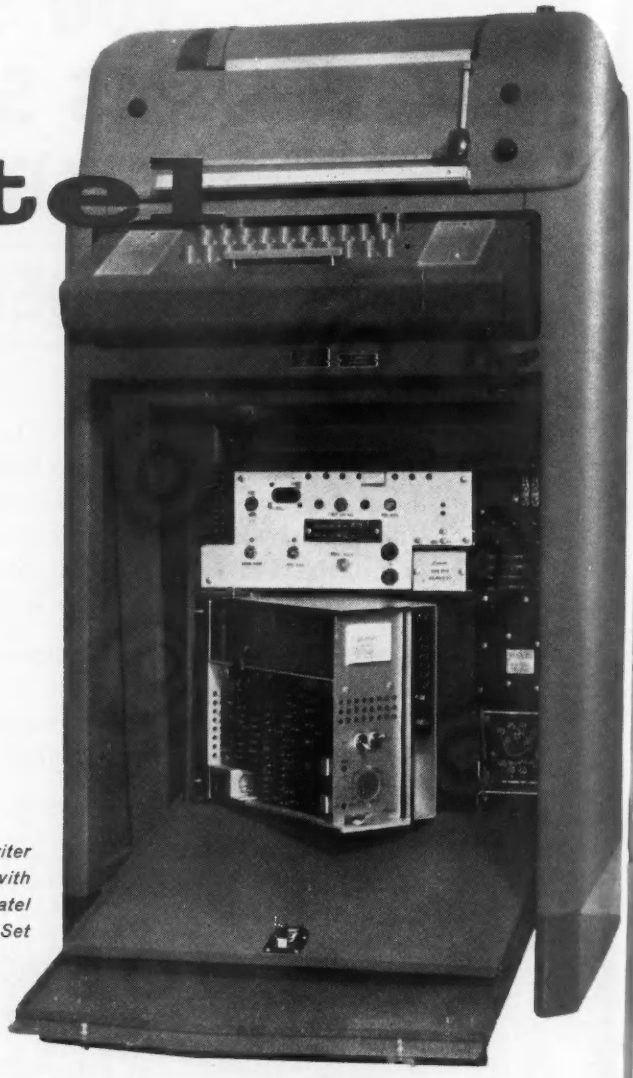
ANACONDA®

FOR ANACONDA ALPETH
COLOR-CODED TELEPHONE CABLE

Anaconda Wire & Cable Company—the independent manufacturer for the independent telephone industry

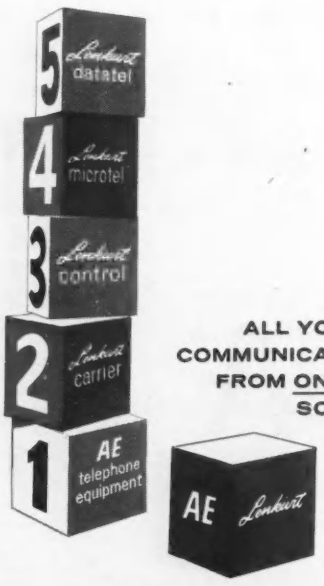
Lenkurt datatel

THE NEW APPROACH TO PROFITABLE CIRCUIT GROWTH



Teletypewriter with Datatel Subscriber Set

Adds high-speed telegraph, telemetering, digital transmission and remote control facilities to any communications circuit



ALL YOUR COMMUNICATIONS NEEDS FROM ONE DEPENDABLE SOURCE

Lenkurt Type 23A Datatel telegraph carrier equipment opens up new and important sources of revenue from business and industrial concerns seeking ways of speeding up day-to-day transactions between offices and plants. It offers you the opportunity of getting more of the highly profitable leased-line and extra toll business *now*.

Lenkurt 23A is designed to operate over voice-frequency circuits, whether physical, carrier-derived, or radio. It can be used for carrier telegraph *up to 100 wpm,* or for the transmission of digital data, telemetering information and control signals.

Provisions are made for the simultaneous operation of 18 channels on a 4-wire circuit, or 9 channels on a 2-wire circuit. Eight additional 4-wire channels or four 2-wire channels are provided above the v-f range, between 3550 and 5050 cps.

Lenkurt Datatel is further proof that AE-Lenkurt is equipped to provide for *all* of your communication needs – planning, equipment, installation, supplies. *There's never need to look elsewhere.*

For full information on Lenkurt Datatel and companion equipment, call your Automatic Electric representative, or mail coupon today.

Check these features!

★ Frequency-shift telegraph carrier system with operating speeds up to 100 words per minute.

★ *Fully transistorized* equipment capable of operating directly from 48 volts d.c. (or 115-volt, 60-cycle mains if desired).

★ Low power consumption – only 2.5 watts dissipation per channel!

★ Trouble-free polar receiving relay provides greater flexibility in loop arrangements than electronic keyer.

★ FS operation affords greatest tolerance to level changes with smaller variations in bias.

★ Presence or absence of carrier can be used for signalling or supervision, as in TWX or TLX service.

★ Partially equipped systems can be installed with only one or two channels – expanded in small steps thereafter.

★ *One* channel unit type is common to *all* channels. Frequency-determining networks are plug-in, simplifying spare equipment requirements.

★ Transistorized circuitry and polar relay simplify servicing. A multimeter and VTVM are normally the only test instruments required.

Automatic Electric Sales Corporation
Northlake, Illinois
Attention: Mr. T. B. Collins, Director, Carrier & Radio Sales

Please send literature on:

- ☐ Lenkurt "Datatel" Telegraph Carrier Equipment
- ☐ Lenkurt "Mobiltel" Mobile Telephone Equipment
- ☐ Lenkurt Microwave
- ☐ Lenkurt Carrier

Name.....

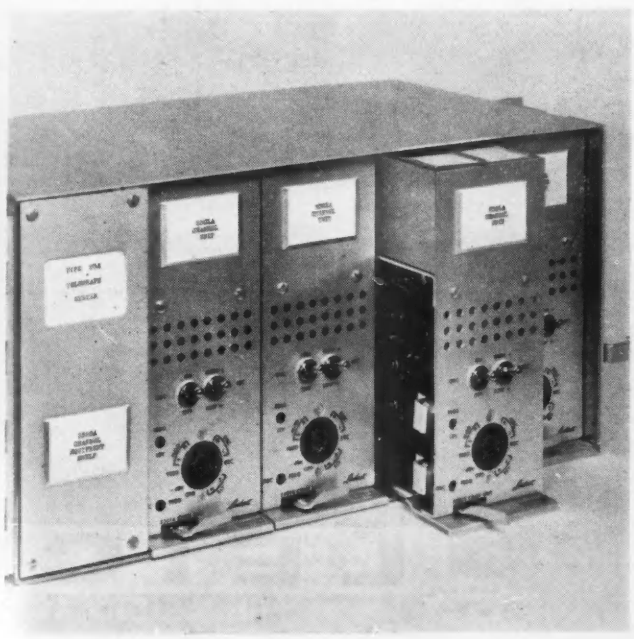
Title.....

Company.....

Address.....

City..... Zone..... State.....

In Canada: Automatic Electric Sales (Canada) Ltd., 185 Bartley Dr., Toronto 16, Ont.



Channel equipment shelf with 4 channel units

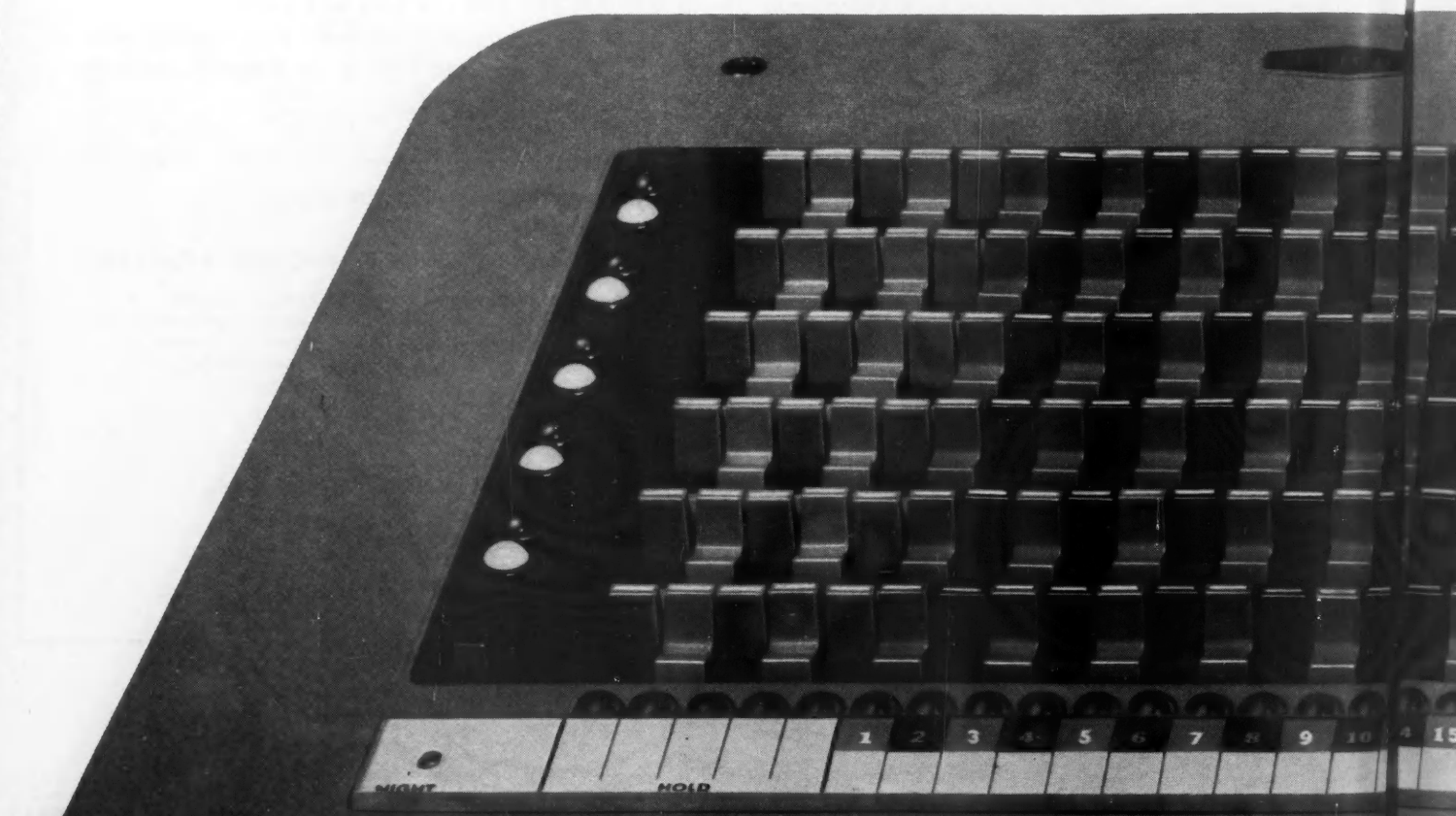
AUTOMATIC ELECTRIC GENERAL SYSTEM

Subsidiary of

GENERAL TELEPHONE & ELECTRONICS

LEICH'S *new look*

The switchboard that sells itself to your subscribers



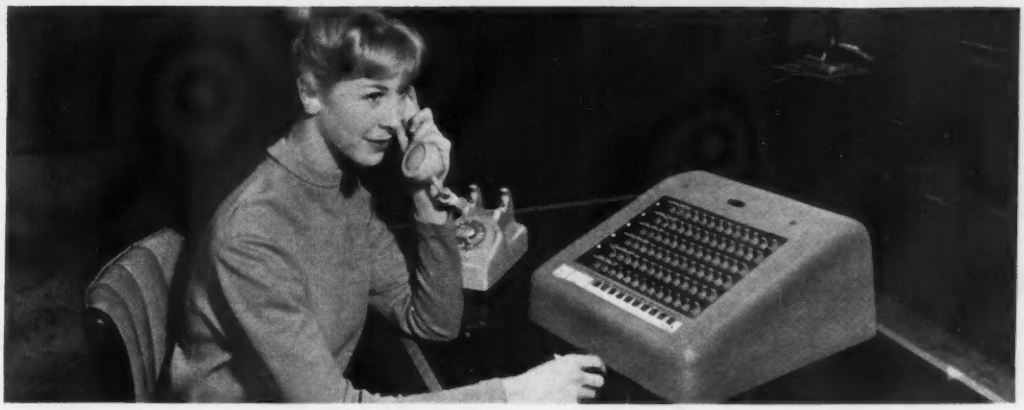
SEND FOR ATTRACTIVE
NEW BROCHURE

GENERAL SYSTEM

LEICH

Subsidiary of GENERAL TELEPHONE & ELECTRON

CORDLESS PBX



Years-ahead styling makes the Leich PBX a switchboard that sells itself. An amazingly simple keyboard lets an operator handle calls faster and easier than any PBX you've ever seen. And Leich's Cordless gives your subscribers all the service features that they desire most.

On top of these big improvements, you have a PBX switchboard unsurpassed for dependability. Thanks to a simplified arrangement of working parts, costly service calls are kept to an absolute minimum with Leich's Cordless PBX. Improved one-way keys assure dependable service. Here is the switchboard that sells itself — in style, in features, in dependability.

You can offer subscribers excellent delivery because these Leich PBX's are available from stock.

modern, compact, easy to operate

A new approach to styling—neat lines, neutral gray finish, small compact cabinet! What more could subscribers want than this 16½" x 16" x 7½" beauty with all the features of larger, more cumbersome boards. The Leich PBX fits easily on the desk and leaves ample room for other work.

But the key to its sales appeal is a simplicity of operation that makes any office girl a switchboard operator. The ingenious key arrangement makes it simpler to handle all the functions of the board. Visibility of keys is better—even numbered station line keys are beige, odd are black, and trunks are gray.

Each key operates in one position only, eliminating confusion and reducing the chances for error. All of this makes the Leich PBX a real good deal for subscribers—it sells itself.

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"The Open Forum" has been created to serve as a clearing house for ideas, comments and suggestions that will be helpful to all members of the telephone industry. Address letters to "Open Forum," 7720 Sheridan Rd., Chicago 26, Ill.

"Business Interruption"

TO THE EDITOR: — "I have been reading with interest the correspondence and editorials regarding hazard insurance for outside telephone plant. Like most companies, we have never been able to secure such coverage on outside plant at what could be considered a reasonable rate, but we have for many years carried insurance against loss of revenue due to any cause, such as fire, flood, sleet, etc.

"This coverage is usually termed 'business interruption,' or 'use and occupancy' and insures against loss of income due to such causes. The premium rates are not unreasonable and it is our opinion that the protection is worthwhile, even if no loss is suffered. It is our understanding that practically all insurance companies can provide this coverage."

S. B. Green,
Chairman of Board,
Ellijay Telephone Co.,
Ellijay, Ga.

Thanks for the tip, Mr. Green. We've passed your letter on to Mr. Ehinger. — Editor

* * *

"A Storm in Kansas"

TO THE EDITOR: — "Thanks so much for your kind and informative letter on 'sleet-storm' insurance. Our Kansas City outlet for Lloyds says 'the coverage which you propose is quite interesting. Inasmuch as we have not handled any coverage of this type, we are writing at once to our Correspondents . . . '

"So you may have stirred up a storm in Kansas. I can see (that was a horrible pun) that this will be a lot of work, but since it conforms closely to the original concept of insurance, it will be most interesting to work out. I do hope we have some luck with it, as surely we ought.

"I do believe Mr. Ehinger is probably the guinea pig of the telephone business, since I've never heard of anything like it in the telephone business. Again guessing, it may never be offered 'over the counter' as regular insurance since the market would be quite limited, and in this 'tornado alley' country the catastrophe hazard can be quite an item.

"George Murphy of the Gorham Telephone Company in Gorham, Kansas is the man who brought the article to my attention. He is an old Bell man from St. Louis, and since I did about the same job for him that Mr. Ehinger's counselors did for him, he likes to bring me up to date. Wish I had 100 like him. Again, our thanks."

Marlyn (Pete) Storm,
Eastlack-Storm Agency,
P. O. Box 635,
Hays, Kansas.

* * *

"Uncollectible?"

TO THE EDITOR: — "I recently had the privilege of reading your (Mr. Stacey's) article in *Telephone Engineer & Management* entitled 'What's Your Uncollectible Ratio?' which, I might say, was quite interesting as well as informative.

"We, as most other telephone companies, have tried various approaches concerning deposits, advance payments, etc. The latest technique that we are using entails the sending of certain form letters, copies of which are attached, to subscribers in lieu of having said subscribers make additional visits to our Commercial of-

Please turn to page 20

New Ford F-100 4-wheel drive Styleside pickup handles heavy loads and makes its own road.

Now from FORD...America's lowest-priced 4-wheel drive pickups... *Six or V-8!*

ALL FORD-BUILT . . . FACTORY-ENGINEERED . . . FOR GREATER SAVINGS!

Go *Ford*-ward for 4-wheel drive performance at big Ford savings. They're factory-engineered for extra stamina, and all Ford-built with your choice of economical Short Stroke power—Six or V-8.

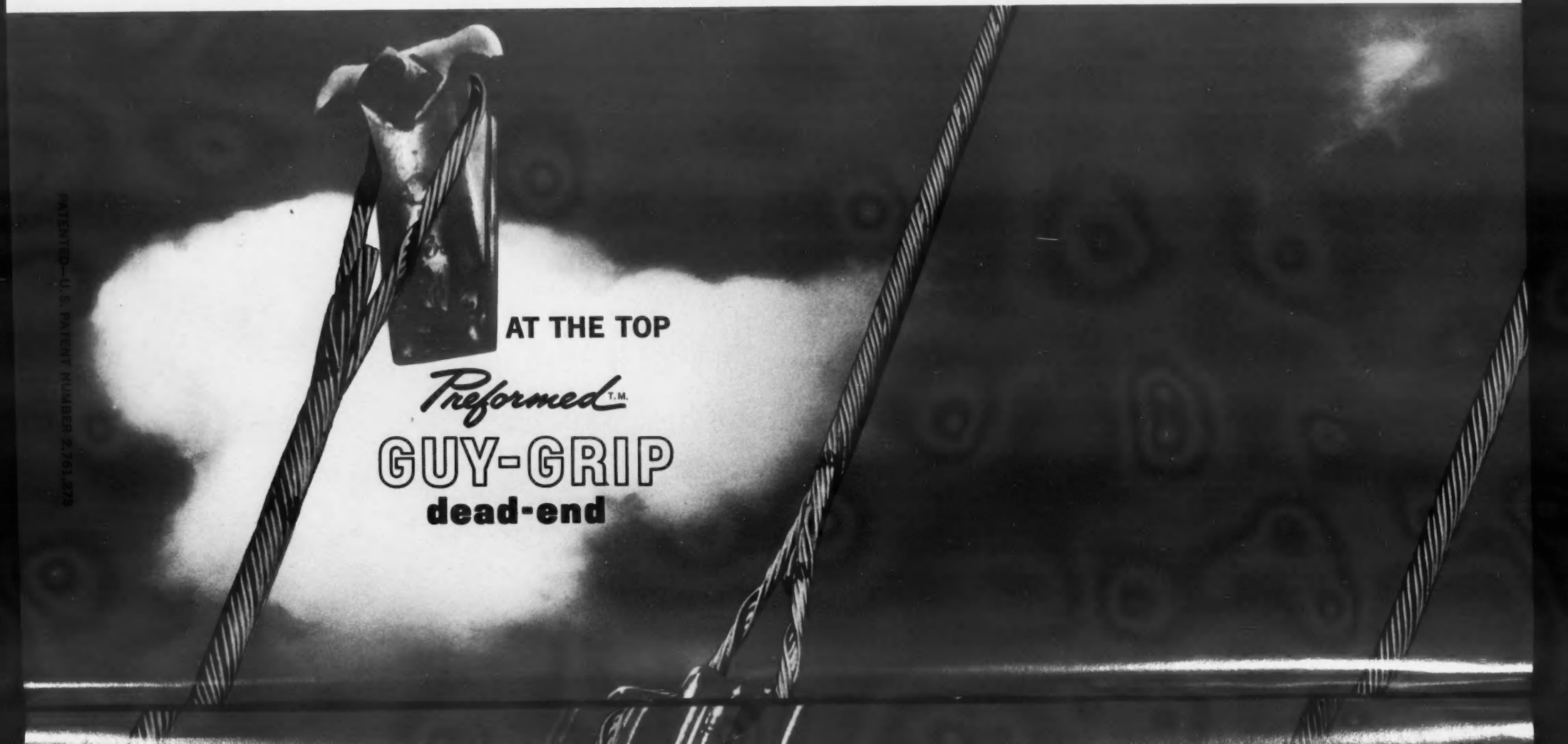
There's new versatility too, with two power take-off points in the transfer case to drive winches, saws, diggers, or other equipment. And there's new driving ease. You shift smoothly between 2- and 4-wheel direct drives while moving.

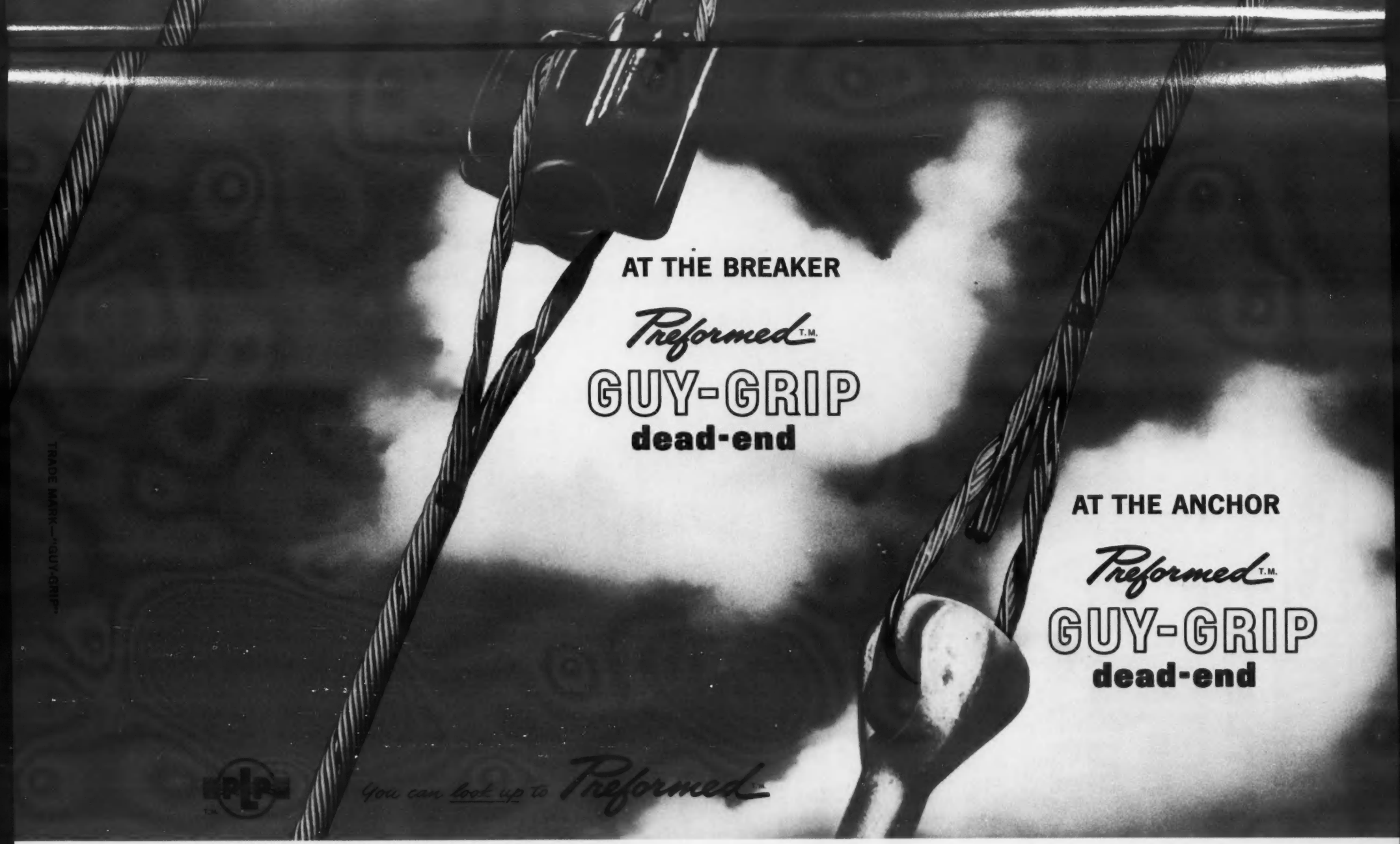
Ford 4-wheel drive trucks are available in ½- and ¾-ton pickups, chassis-cabs and ¾-ton stake models. See your Ford Dealer . . . save hundreds of dollars on America's lowest-priced 4 x 4's with Six or V-8!

FORD TRUCKS COST LESS

LESS TO OWN . . . LESS TO RUN . . . LAST LONGER, TOO!

For the most DEPENDABLE GUY





Write for the Preformed
Booklet-of-the-Month
"THE GOOD GUY"

PREFORMED LINE PRODUCTS CO.
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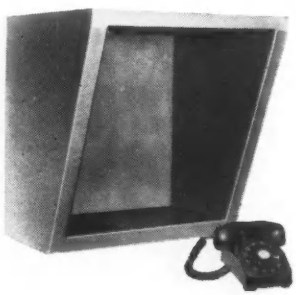
WHAT'S NEW AT

SUTTLE

TOP VALUES

LOW COST SOURCE OF NEW REVENUES

Use-surveys prove that SUTTLE Drive-Up Booths are the most profitable outdoor telephone pay stations yet devised. Motorists phone from their cars and coin boxes jingle with increased revenues. Lighted signs, lighted hoods and other accessories immediately available. Priced at $99.50. Write for full literature.



When noise is a problem SUTTLE's scientifically designed Model A-12 Shop Booth eliminates hearing problems in your subscribers noisy plant location. Noise levels are cut by as much as 50%. The A-12 will accommodate any telephone, pay phone or intercom system. Costs less than half of other types. Will last for years—guaranteed by SUTTLE. Long wearing, baked gray enamel finish. Only $77.50. Send today for free catalog of complete booth line.

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Phone: Lawrenceville 782

135 S. La Salle St., Chicago 3, Ill.
Phone: DEarborn 2-3108

The Open Forum

(Concluded from page 16)

fices. The use of the aforesaid letters has just been initiated and, as yet, we have no statistics regarding their effectiveness. We trust the attached letters will be of interest to you."

Henry L. Burton,
Asst. to Division Commercial Mgr.,
Virginia Telephone & Telegraph Co.,
Charlottesville, Va.

* * *

"New Approach"

TO THE EDITOR: — "Your article 'New Approach to Brush Control' (John Reed's 'Plant Notes') in June 15 issue of Telephone Engineer & Management was most interesting to the smaller telephone companies. Please provide the name of the manufacturer or supplier so that we may get detailed information as to the application and the prices of 'Dybar' fenuron brush killer."

D. B. Franklin,
Secretary,
Statesboro Telephone Co.,
9 South Main St.,
Statesboro, Ga.

Write E. I. Du Pont de Nemours, Inc., Wilmington, Dela. for complete data. — Editor

* * *

"Valuable to Management"

TO THE EDITOR: — "Thank you very much for your letter of May 27, 1959, granting us permission to reprint the article entitled 'The Anatomy of Attrition' by Mr. P. M. Schuchart, which appeared in the May 15 issue of TELEPHONE ENGINEER & MANAGEMENT.

"We have had 175 copies of this article reprinted and distributed to our management people in Florida . . . We appreciate very much your allowing us to reprint this article and feel confident it will prove valuable to our management people receiving it."

John P. Evans,
Assistant Vice President,
Southern Bell Tel. & Tel. Co.,
Lynch Building,
Jacksonville, Fla.

* * *

"Spec Books"

TO THE EDITOR: — "Please quote to us prices on your Plant Man's 'Spec' Books. We may want the full set for plant and electronics."

P. T. Campbell,
Manager,
Campbell-Terrell Telephone Co., Inc.,
Route 1,
Hanover, Va.

We wish we could. But it will be a long time before we can reprint the books. In the meantime we suggest you continue clipping the material and building your own reference books. — Editor.

* * *

"Electronics Notebook"

TO THE EDITOR: — We are compiling two books from the 'Electronic Notebook' pages in "Telephone Engineer & Management" magazine. I would like to take this opportunity to commend you on the note book project.

Gardner Hopwood,
General Manager,
Molly Falls (Vt.) Tel Co.

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Rural Telephone Lines

TALK BETTER LAST LONGER

with low-cost

Copperweld® O-Eighty-Thirty

TELEPHONE LINE WIRE

The superior voice transmission of O-Eighty-Thirty Telephone Line Wire makes friends and builds good will every time a subscriber picks up his phone. And this low-cost line wire continues to provide the same excellent talking qualities even after many years of service. There's no building-up of noise level and weakening of signals due to rust, because O-Eighty-Thirty is completely non-rusting.

You save money, too. The initial cost is practically the same as ordinary wire. And its extra high strength permits economical long-span construction on both voice and carrier circuits. O-Eighty-Thirty is easy to install, due to its light weight—which also saves on shipping and handling costs.

In short, you can provide high-grade service at low cost for your subscriber loops and secondary toll lines by stringing O-Eighty-Thirty Line Wire. And you'll be building for long, trouble-free life.

Write us today for prices, sag data and staking tables.

COPPERWELD STEEL COMPANY

WIRE AND CABLE DIVISION *Glassport, Pa.*

For Export: COPPERWELD STEEL INTERNATIONAL COMPANY, New York

SOLD BY LEADING DISTRIBUTORS

FOR EVERYTHING YOU NEED

Kellogg is close by with fast, dependable

Nuts, bolts, cable, terminals, batteries... you'll find everything it takes to run a telephone company under one roof at Kellogg. Eight completely stocked, conveniently located warehouses are only a phone call away. And when you call Kellogg you're talking with trained, experienced telephone men who understand your needs, know exactly what you require. For telephony's most complete source of dependable equipment, such as shown on these pages, and fast, efficient service... call your Kellogg representative.

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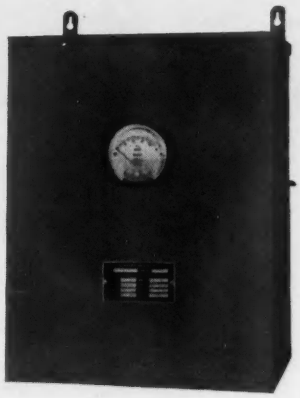
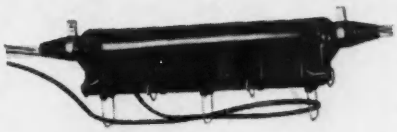
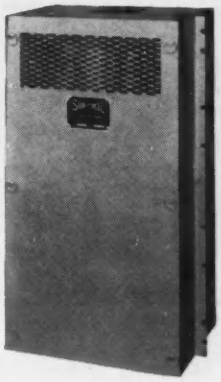
6650 South Cicero Avenue, Chicago 38, Illinois
Communications Division of
International Telephone and Telegraph Corporation



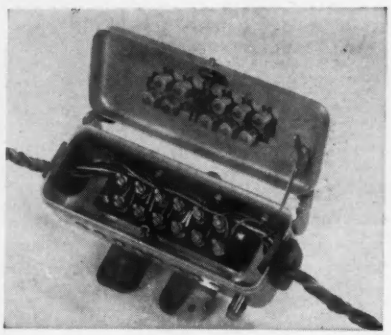
Dependable Power! Hundreds of telephone exchanges throughout the world attest to the low first cost, low operating cost, and thoroughly dependable service of Electrox Battery Eliminators and Chargers. Made by the SCHAUER MANUFACTURING CORP.



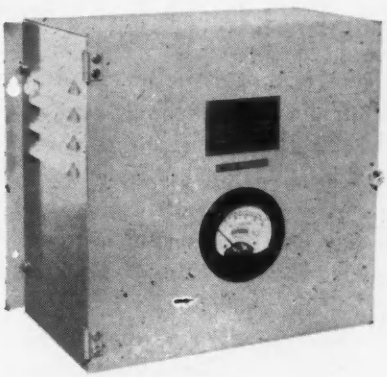
Ready Access Wire Terminal—Reliable's 500 Series Ready Access Wire Terminal answers the need for a wire terminal especially adapted to multi-par distribution wire. Easily installed at any location on the support wire, it is easier to maintain. The neat, flexible neoprene cover gives maximum service life and can be folded back if internal wiring is altered. The neoprene base closes off the bottom of the terminal and provides 24 numbered entry points for drop wires. Up to four 6-pair Reliable Cat. No. 105 Terminal Blocks can be added at any time to make 6, 12, 18 or 24 pair terminals to correspond to the wire size. RELIABLE ELECTRIC COMPANY.



For Decimonic Ringing Systems—The K-5 Subcycle supplies permanently accurate ringing frequencies and closely regulated ringing voltages. Requires little power to operate and minimum maintenance. LORAIN PRODUCTS CORPORATION.



The RDW Tap provides an economical method of connecting subscriber drops to the rural distribution wire without cutting, splicing, or tapping. It provides a low-cost maintenance test point, and additional drops can be installed without opening line wire splices or installing additional equipment. COOK ELECTRIC COMPANY.



RECTIFILTER® Battery Eliminator. Completely self-contained source of DC talking and ringing voltage. When connected to a standard AC line, the unit provides continuous filtered 24 volt or 18 volt power for talking and 24 or 18 volt DC power for ringing. May be wall or floor mounted. RAYTHEON MANUFACTURING COMPANY

Longer spans, lower costs. Crapo HTL-195, the new extra high tensile, lower resistance telephone line wire makes possible up to 40% reduction in pole structures with marked savings in construction costs. Developed and manufactured by INDIANA STEEL & WIRE COMPANY, INC.

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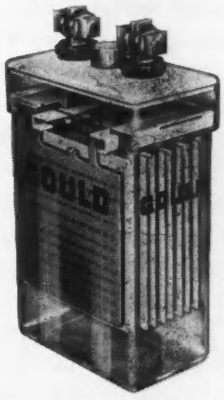
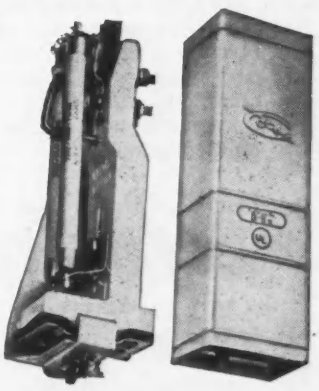


Outstanding Battery Performance is yours when you choose Gould Planté Batteries. Thick, grooved, pure lead positive plates give many years of trouble-free service! Made by GOULD-NATIONAL BATTERIES, INC., the finest money can buy.



A Single Circuit Protector for both indoor and outdoor use. The Type 09U is equipped with Tru-Gap dischargers, carbons, 7 amp. fuses, a porcelain base, and a gasket and locking device. A product of COOK ELECTRIC COMPANY.

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MICROWAVE ANTENNAS

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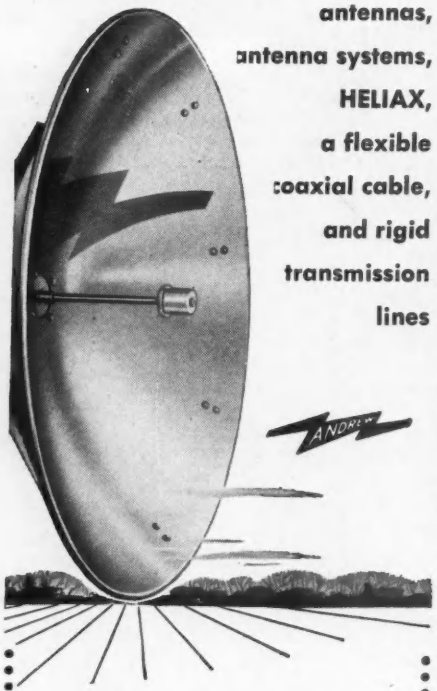
and rigid transmission lines



Accurate, reliable antenna performance is vital to every microwave system. Andrew engineers are specialists in the design and manufacture of parabolic antennas for microwave . . . experienced in planning complete systems for commercial and military use.

Andrew produces over 30 standard models of parabolic antennas. Special models or adaptions made to order.

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INDUSTRY OBSERVATIONS

by L. A. GRITTEN

"Is A Man Through At 65?"

"There is something sadly wrong with a policy that would have discarded Winston Churchill in 1939, Konrad Adenauer and Charles F. Kettering in 1941, and John Foster Dulles in 1953 . . . ."

"Worse Than A Crime, It Is A Blunder"

NEXT MONTH, a prominent Bell System official will retire from that service and become head of an Independent telephone company. Thanks to the age 65 limit, Mother Bell loses, and the Independents gain, an able and vigorous executive.

In a magazine article (*"This Week,"* 7-12-59, *"Why should you retire at* 65*?"*) Dr. Louis Orr, president of the American Medical Association, denounces any arbitrary system which forces retirement at a given age. He says there is no scientific reason for selecting 65 as the age at which one ceases to be productive enough for continued employment. He points out that many men 65 and over are in better mental and physical health than persons 10 or 20 years younger. Dr. Orr and the American Medical Association call for the abandonment now of arbitrary retirement systems.

It is not merely unfair to boot out those who want to work and are still efficient and vigorous at 65. It is worse than unfair. Our economic system is fighting for its existence against the inroads of Russian philosophies and Russian industrial competition. We cannot afford the tragic waste of "Scrapheap at 65, regardless" policies. Certainly the Russians are not throwing away manpower in that fashion.

There is something sadly wrong with a policy whose general application would have tossed into the discard Winston Churchill in 1939, Konrad Adenauer and Charles F. Kettering in 1941, and John Foster Dulles in 1953.

L. A. GRITTEN'S "Industry Observations" appear exclusively in "Telephone Engineer & Management."

* * *

Attack Is The Best Defense

THE RECENT New York Court of Appeals decision, permitting the attachment of covers to our telephone directories, is one more nail in the coffin of our "No Foreign Attachments" policies. We may expect a further increase in the flood of gimmick salesmen. All this became inevitable when most telephone companies adopted the "clean cover" idea and put all advertising and vital information inside. Now that our outside covers generally carry nothing more important than the exchange names and a ghastly 3-color picture, there is little reason why they should not be obscured.

The small Independent operator, if he is not married to the "Yellow Section Only" philosophy, may effectually and profitably discourage these cover salesmen by selling every available inch of outside cover for advertising, to prominent business-

WHEN YOU BUY EXIDE YOU GET YOUR "CHOICE"

Exide-Tytex Batteries with Silvium Grids were chosen by General Telephone Co. of Wisconsin for this exchange at Marshfield, Wis. These batteries now feature improved construction that means longer life and greater economy than ever.

No one stationary battery type meets every user's preference. But Exide offers all types . . . and in every case guarantees Exide quality construction and performance. This is an important reason for buying Exide. With no ax to grind for any particular battery, Exide can give you honest information on all types: Exide-Manchex plante type with Silvium corrosion resistant grids, Exide-Tytex with Silvium grids and Exide-Tytex with calcium grids. Available in the widest range of capacities in the field. So choose the battery that meets your needs exactly. Buy from the Exide line. Rectifier and motor-generator chargers available to cover any application requirements.

For complete information on Exide stationary batteries, write for new illustrated brochure. Exide Industrial Division, The Electric Storage Battery Company, Philadelphia 20, Penna.

Exide®

For faster, better tree trimming with less fatigue

Chance *Power* Pruners

These air-powered pruners make a clean one-stroke slice through green branches up to 2 inches in diameter. No splitting or chewing of branches. Jaws re-open automatically after each cut. These lightweight, well balanced tools are easy to use—require no experience to operate from "buckets," ladders, or in trees.

Chance Power Pruners, Guy Strand Cutters and Communications Cable Cutters are air powered. They operate from many power sources — compressors of any type or standard cylinders of dry nitrogen. Insulated and non-insulated models are available.

A. B. CHANCE COMPANY

CENTRALIA, MISSOURI

A.B. Chance Co. of Canada, Ltd., Toronto

CT59-14

men in his locality. This offers a good revenue for very little sales effort; telephone directory outside cover space almost sells itself at top prices; and it has one great advantage. If a few of the local V.I.P.s are cover advertisers, they will fight the battle for you. The local Chamber of Commerce will make things tough for anyone who tries to mask what its members are paying for.

Probably the best solution for any foreign attachment problem is to outsell the "foreign" salesman and give our customers a better deal for less money. The history of most successful foreign attachments is that our customers were willing to pay for them and resented being forbidden to use them. That applies to such things as Hush-A-Tone, directory covers, various intercom devices and so forth. If we adopt a "dog-in-the-manger" attitude and stand stiff on our filed Rules and Regulations, we are beaten; for even if we win one particular battle, it costs us too much in damage to our public relations.

* * *

How Common Is Sense?

ALBERT EINSTEIN said: "Common sense is that layer of prejudice laid down in the mind prior to the age of eighteen." The more one thinks that out, the more there is in it to think out. As a taxi driver informed us, that guy Einstein wasn't so dumb.

* * *

The Ubiquitous Telephone

WE HAD escaped! Far from telephones and deadlines, we lay in a deckchair in the shade of a travel trailer, lazily absorbing the upper reaches of Franklin D. Roosevelt Lake in northeastern Washington, a glorious vista replete with forests and mountains. In the near foreground there was an idyllic backwater, tastefully embellished with canoes, speedboats and girls in the raw — or nearly so. At our side there was a long cool glass of water, its bacteriologic menace averted by the addition of a germicide known as Bourbon, quant.

"Can you climb like that?"

suff. Telephones and their troubles were remote, mentally and physically.

Then, by pure chance, along came Lester Scott, president of the Oregon Independent Telephone Association, also trailering around in God's Country. (For the benefit of the unfortunate inhabitants of other areas, we define God's Country as that part of the United States and Canada using either Pacific or Mountain standard time, and lying north of latitude 40°N, give or take a few miles.)

We talked about telephones, of course. Said Lester: "The greatest threat to the Independents today is the spread of Extended Area Service to the larger centers. If more equitable agreements with the Bell companies cannot be reached, many small Indpendents will be forced out on that issue alone."

* * *

Maritime Hardship

IN VICTORIA, B. C. recently, a Seattle yachtsman tied up his yacht in the inner harbor, one hundred yards across the street from the beautiful Empress Hotel. He wanted ice cubes. He ship-shore telephoned to Seattle, 80 miles to the south, thence by long distance to the Empress in Victoria. Five minutes later a bellhop brought his ice . . . . As Samuel Morse would have remarked: "What hath God wrought!" — *L. A. Gritten*

It takes equipment and man-hours to stay on top of telephone maintenance. The more you have in good equipment, the fewer man-hours it requires. Example: this Holan CS-102L Cable Splicer and Maintenance Body—with Ladder.

Here, two men and a truck can handle just about any patrolling, inspection and emergency jobs. The body has lots of compartmentation, special Holan features like the indented door handles and light-but-strong high-tensile steel construction.

The Series 2500 Ladder pumps up quickly to an infinite number of positions, can be elevated and spotted with a man on fully-extended fly ladder. It comes with a duo-level platform.

Write for our cable splicer bulletin—or ask specifically about the CS-102L . . . available with all-hydraulic, manual and pushbutton ladders, too.

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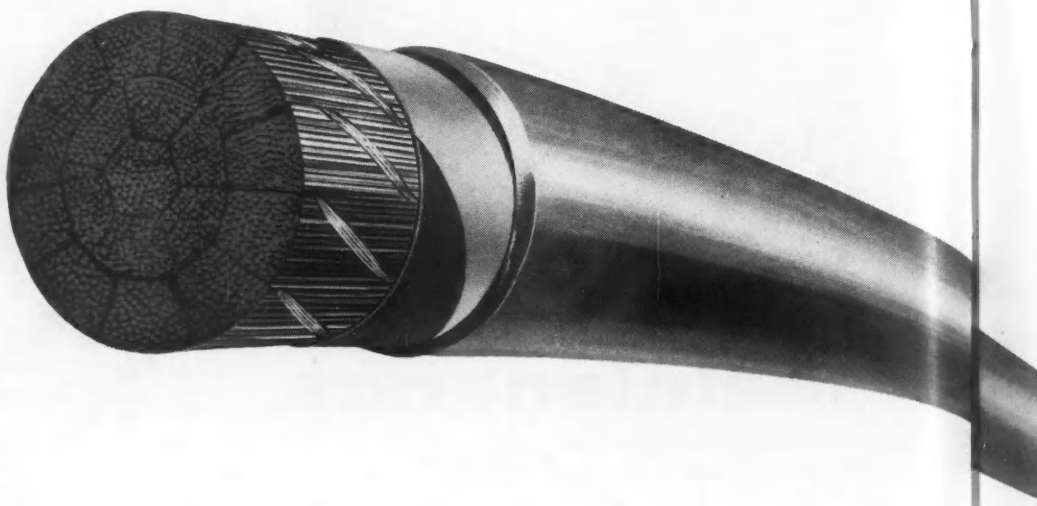

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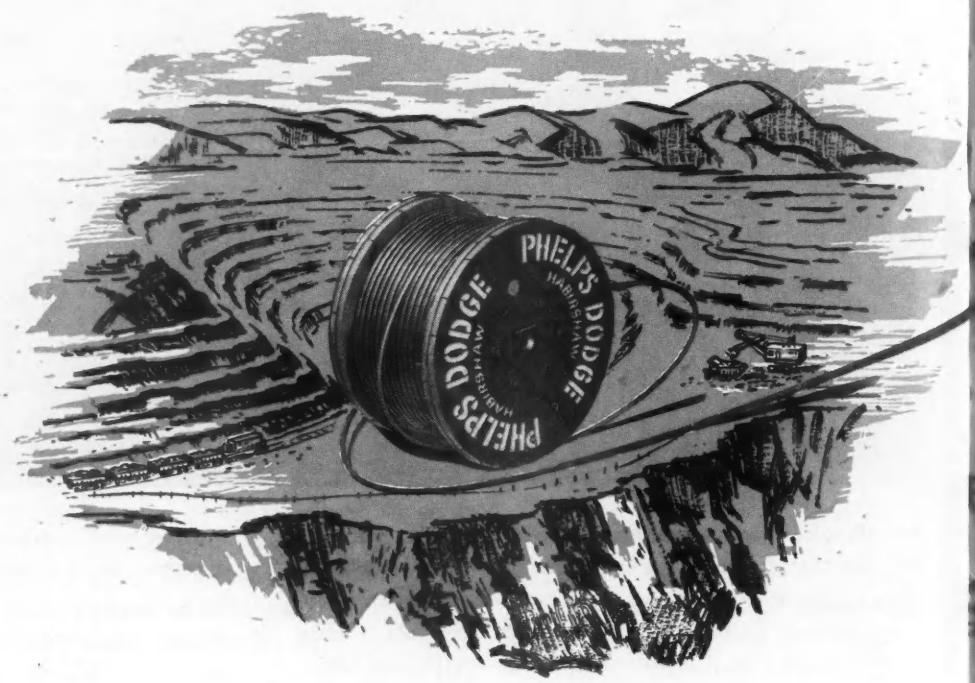

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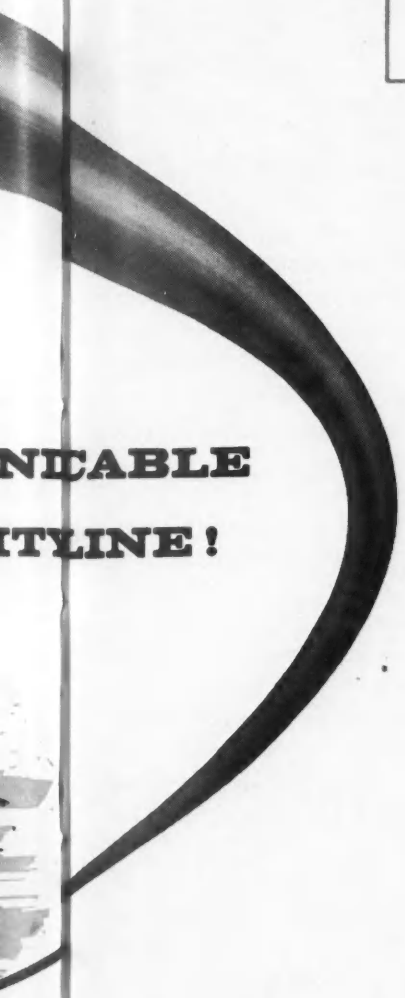

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Interstate Toll Tariff Revisions To Be Filed By Bell System Companies

New tariffs will produce revenue reductions of $47,000,000 a year. Later adjustments will boost reduction to $50,000,000 . . . USITA President describes absence of provisions relating to Independent companies as a "severe blow" to the nation's Independents.

REVISIONS in Bell System interstate long distance telephone tariffs, almost entirely at distances of 675 miles and up, to produce revenue reductions of $47,000,000 a year, based "on current volumes of traffic," will be filed by the American Telephone & Telegraph Co. and the Bell System associated companies who have their own interstate message toll tariffs some time after mid-August, it has been reported by the Federal Communications Commission.

Initial period rates for station-to-station calls will be trimmed by amounts ranging from five cents in the first mileage rate step above 675 miles to 25 cents at the longest hauls. Additional minute rates will be cut back five or 10 cents above 675 miles, and also at the 469-506 and 601-675 mile brackets.

Later adjustments will bring the total revenue reduction up to $50,000,000 figure which had been announced by the FCC a week earlier. This will result mainly from the adoption of the V-H system (vertical and horizontal geographical coordinates) of measuring the distance of calls, now in use for Bell System private line services, compared with the former block system of measurements.

Agreement by the Bell System to reduce the rates, at the insistence of the FCC, immediately led to strong criticism by US Independent Telephone Association President Hugh A. Barnhart, who described the absence of specific provisions relating to Independent telephone companies as a "severe blow" to the nation's Independents.

Mr. Barnhart declared that "It is to be regretted that the interests of Independent telephone companies seem to have been ignored when the reductions were negotiated. It is apparent that Bell System representatives did not draw the Commission's attention to the over-all problems of 3850 connecting companies. And it is also apparent that Commission personnel were oblivious to previous Commission policy.

"Failure to think of the Independent companies and their revenue needs was unhappily at variance with what took place in an earlier era. In 1941, and again in 1943, when interstate rate reductions were negotiated, it was made plain in Commission announcements that the Independents were to be kept whole and that the reductions were not to affect their revenues.

"Unless this policy continues to be adhered to and attention is given to the situation confronting our Independent companies, grave injustice will be done. The USITA is bringing the implications of a manifest oversight to the attention both of the AT&T and the (FCC)."

In connection with the effect on the Independents' toll compensation, Bell System sources declared that any change in settlements resulting from a decline in average per message would be insignificant, and no more than would come about in normal month-to-month business fluctuations.

They stated that nearly half of all current settlements, from a dollar point of view, will be wholly unaffected, because about one-third of dollar settlements are on individual company cost bases, unaffected by average revenue per message, and another group, making up the remainder of approximately one-half of the total, are on previous average settlement schedules which are higher than the more recent recommended schedules in the industry.

Of the remaining half, about one-third of the dollars come from interstate calls. But of this total (roughly one-sixth of total settlement dollars), the Bell System sources continue, relatively few calls are of more than 675 miles in length. The Bell System experience is that 12% of all interstate messages (number of messages, not dollar revenues) are over 675 miles, and it is thought that somewhere between 5% and 10% of interstate messages interchanged with Independents would be of this length.

Thus, it is contended, the ARPM effect of a 5-25 cent reduction in calls over 675 miles in length would get down to mills per message, rather than cents, and since at the longer distances the settlements are based on bands two to 10 cents wide, the changes of any significant effect are very limited.

The effect of the reductions on the Independents' toll compensation and settlements appeared, on that basis, to be more prospective than present. Bell System-USITA discussions reported previously in this space led to a Bell System offer for revised settlements, pending cost studies, taking into account the existing level of Bell System earnings. Clearly, a cutback in the rate message toll earnings lessens whatever possibility was remaining of a general agreement be-

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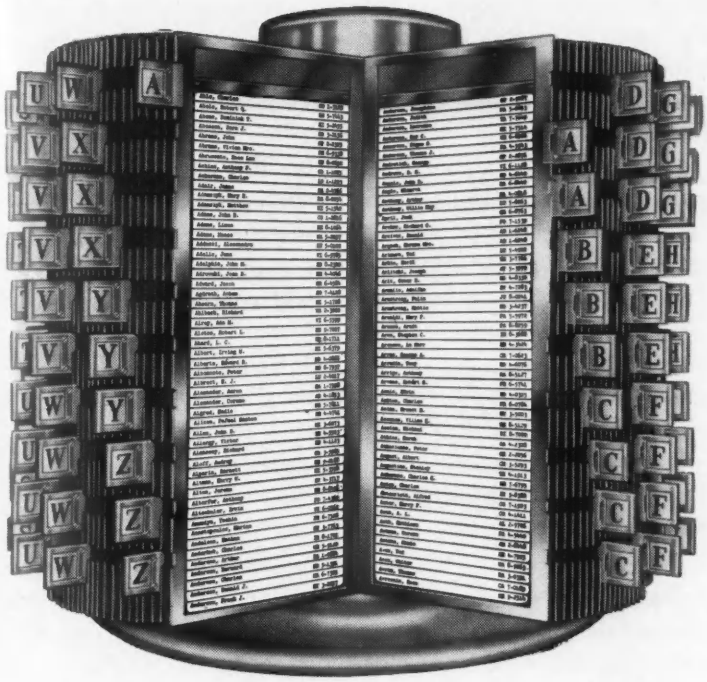

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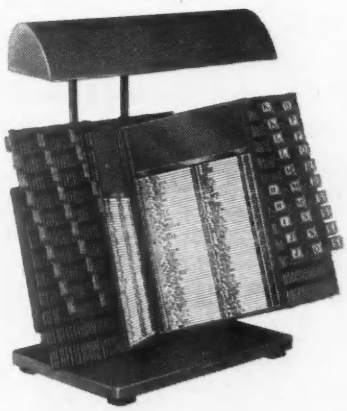

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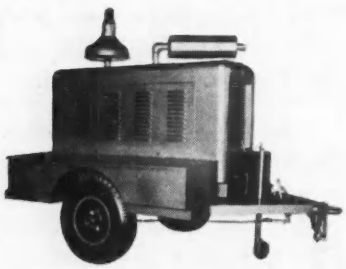

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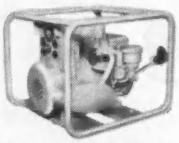

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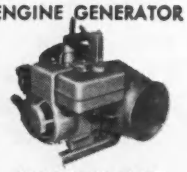

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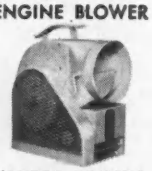

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tween the two branches of the industry on upward revisions in settlements.

Also, there had been a line of thinking to the effect that, with Bell message toll earnings running at a relatively high level, compared with the experience of past years, the Bell System might have preferred to reduce its earnings rates by substantial boosts in toll compensation, rather than giving the customers the benefit of rate reductions.

No rate of return figures have been made public. This department has learned, however, that on the rate base employed by AT&T in its computations of interstate message toll earnings ratios, the revenue reductions will cut that figure to 6.70%, compared with 7.36% prior to the cutbacks. The company includes cash working capital, materials and supplies, investments in affiliates, and plant under construction in the base for computation.

On the FCC staff's base for computation, which does not include the above-mentioned items, but does encompass property held for future use and the plant acquisition adjustment account, the previous interstate earnings ratio was 7.70%, and the reductions will cut it to 6.95%.

Both sets of figures are based on the 12 months ended May 31, 1959. It must be remembered, in considering them, that the FCC has never formally established rate base policy for interstate telephone operations, and discussion of such earnings must be carefully qualified by a description of which basis is being used.

In its action in the several weeks of negotiations in driving for a rate reduction and ultimately arriving at the $50,000,000 figure, the FCC had in mind, it is understood, current economic trends, such uncertainties in the current picture as the steel strike, and the benefits to customers of prompt rate changes — as compared with the likelihood that had no settlement been reached with the company, a long show-cause rate hearing would have resulted.

Estimates of exact percentage reductions resulting from the $50,000,000 cutback have varied, depending on what base is used, but one current figure is that the result will be a 3.4% reduction in total interstate message toll revenues, on a current basis.

Target date for the reduction is mid-September, and AT&T now has obtained permission to file the necessary tariffs on less than the usual 30 days' statutory notice. It appears quite likely that, because of the complexity of the job, the actual tariffs will not be filed until the early part of September.

The Commission, in its first announcement of the reduction, said that "it will continue its studies of interstate long distance telephone rates and trends, and will observe the effects of the new rates on the Bell System's earnings."

AT&T President Frederick R. Kappel expressed regret that the "FCC has directed reductions in long distance rates, because I believe this action ignores the long-range interests of the public."

Mr. Kappel commented that "Right now, we need to spend millions to make the quality of our service still better, add the facilities needed for growth, and enlarge and strengthen the communications network for national defense. These assignments call for financial strength.

"While earnings on our interstate long distance business have improved in recent years, they are lower than they should be and well below earnings of business generally.

"Three things have brought our earnings on interstate long distance business to their present modest level: technological advances by Bell Telephone Laboratories, particularly on the very long circuits, efficient management, and more long distance calls in this period of peak prosperity.

"The first two resulted from hard work and incentive. It is wrong to penalize a business because it has good research and good management. The third point — more calling — is the product of a high business curve, and it is as wrong to base rates on peak activity as it would be to base them on recession levels." — *Roland Davies & Fred Henck.*

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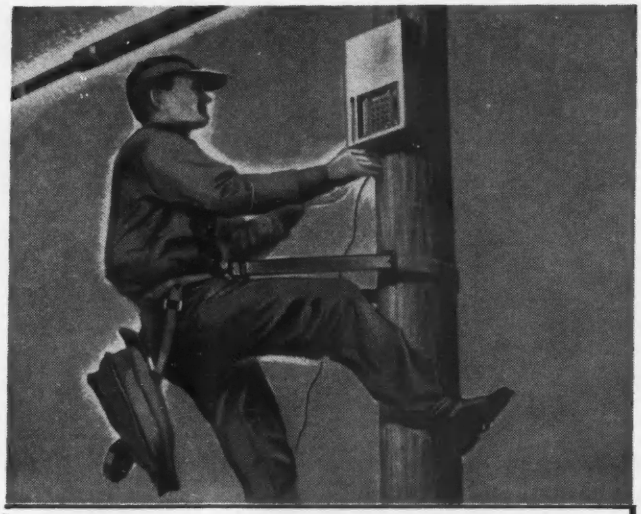

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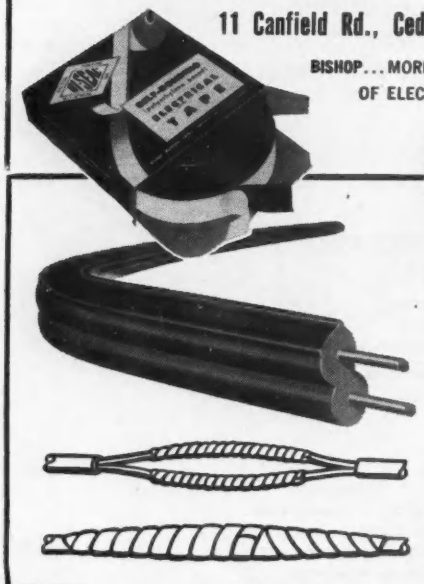

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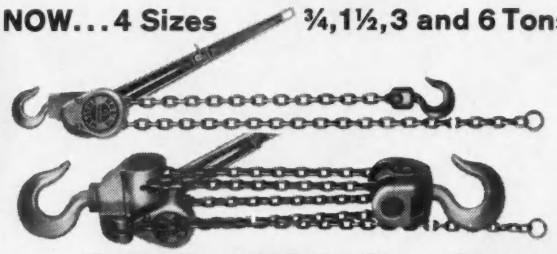

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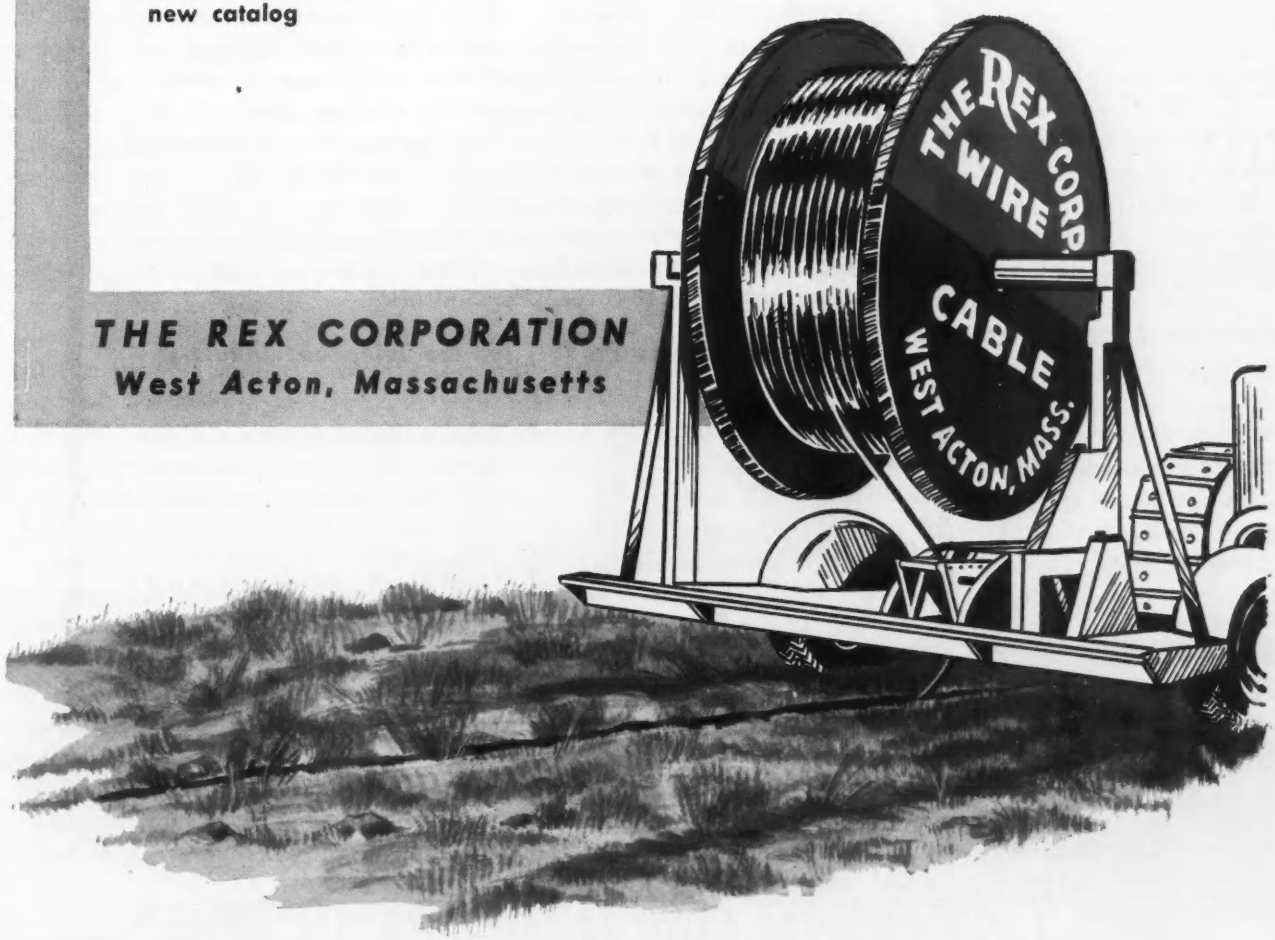

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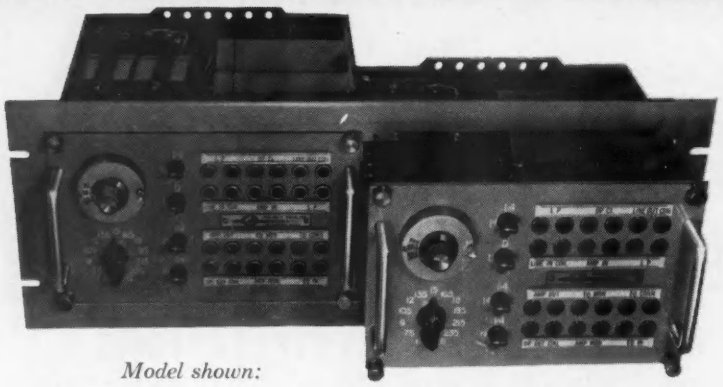

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AIRTRONICS PROGRAM EQUALIZERS *are available in portable, wall mounting, or standard 19" or 23" rack-mounting arrangements. Rack mounting provides test and monitoring jack features. Special purpose equalizers available on order.*

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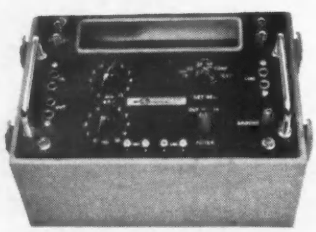

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EDITORIAL

"New Employe In '44—A Pioneer Today"

AROUND OUR PLACE our record of the important dates of the past and the present is never far away from our minds and our hands as we set about preparing a new issue of TE&M.

And a few weeks ago this record served to remind us the Independent Telephone Pioneer Association (ITPA) could this year look back on 39 *years* of important service to the telephone industry and to the men and women who have devoted a large part of their lives to the task of enabling their fellow citizens to talk with each other any time of day or night and with practically anyone anywhere in the world.

The record also reminded us that this year — 1959 — several hundred men and women who started their telephone careers in 1944 have become eligible for membership in the Independent Telephone Pioneer Association.

The industry owes much to the men and women who are now completing their 15th year of service as telephone employes. They, like other industry pioneers, have aided the development and operation of a great system of communication. They have played an important and decisive part in the maintenance and the enhancement of the telephone industry's ideals of outstanding service to the public. They have helped make this reputation for service a tradition of the business, recognized by the nation.

Also, this new group of industry veterans continued to pioneer and to maintain the industry's record of leadership, not only in technical advances, but of leadership in creating relationships that benefit not only the telephone business but the general welfare of this country.

It is right that the telephone men and women who joined the industry in 1944 should now become eligible for membership in the Independent Telephone Pioneer Association. They have earned this honor, and we urge each industry member who is now observing his or her 15th anniversary as part of the nation's telephone group to become an ITPA member.

Such membership, although it must be earned by 15 years of service, is not exclusive or restricted to any special group.

Actually ITPA membership is divided into three classifications:

(1) *Active Members* are men and women of good standing presently or previously employed in the Independent telephone industry, or its associated interests, who have had not less than 15 years of service in the industry and who at the time of application are employed in the Independent telephone industry, its associated interests, the communications branch of the Armed forces, or as private branch exchange operators, or who have retired. (Annual membership dues are $3.00.)

(2) *Auxiliary members* are persons not engaged in the telephone industry or its associated interests, who are wives or husbands of active members, or wives and husbands who have not yet completed the 15 years required to become active members. (Annual membership dues $2.00.)

(3) *Associate Members* are Independent operating, manufacturing, or supply companies. (Annual membership dues not less than $5.00.)

Made up as it is of men and women who have engaged in telephone work for 15 years or more, telephone operating companies, and manufacturers and suppliers serving the telephone industry, the Independent Telephone Pioneer Association has and is living up to its original dedication — *deserved recognition to the men and women who have served the Independent telephone industry long and well.*

And this year we hope that several hundred of those telephone men and women who have recently become eligible to join the Independent Telephone Pioneer Association will join and start wearing the telephone industry's badge of honor — *the ITPA emblem.*

That's one honor the industry has reserved for those who started their telephone career in 1944 and are the new pioneers of today. If you are a member of that group we feel sure a letter addressed to *Mrs. Mayme Workman, executive secretary, Independent Telephone Pioneer Association,* 1037 *S. 4th St., Springfield, Ill.,* today will bring you an application blank by return mail.

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"In a few years our new rural subscribers will want the 'upgrades'."

A Growing Problem —

The Rural Demand

For One-Party Service

BILL CORMAN

The problem of rural telephones is not merely the installation of them. Today's problem requires an answer to the rural subscriber's request for 1-party service.

By BILL CORMAN*

ANYONE who writes to, about, and for small telephone companies invariably finds himself forced to make a few predictions. Later, when some of the predictions come true, the author naturally feels somewhat satisfied.

A few years ago I made some sort of a prediction that it was no longer a question *if* rural telephones would be installed, but that the real problem was *how* to do it feasibly. At that time I stated rural telephones were going to be installed by someone. But the fact that I was at least partially right has not left me the least bit smug. On the other hand, I am somewhat chagrined that I didn't see the picture more clearly. What I could see was all right, but I didn't see half enough.

The problem of rural telephones is not merely the feasible installation of them. The problem is rapidly turning itself into something much tougher: the feasible *upgrading* of them. Today's rural problem is proving feasibility not only on eight and 10-party rural service, but on one, two and four or five-party service.

*Mr. Corman is manager of the Southland Telephone Co., Atmore, Ala.

And this, if you will pardon a worn-out expression, is something else again.

Now at this point, I hope you have said to yourself, "Well, that certainly is not news — I've known that for two, or three, or four years." I know some readers will *think* just that, for I have talked with a large number of small company folks who feel that way. However, *thinking* is about all anyone has done. As I now see the picture, something more than *thinking* is in order — and the quicker the better.

Rural Demand For One-Party Service

OF COURSE, I don't know what's happening at your company, but I do know what's happening at our company and several others like it: People from the strictly rural areas are coming in and wanting to know how they can get one-party service, and such requests are increasing. The mileage rates discourage some, but there is a definite increase in the number that aren't discouraged.

I realize there are still many small companies that haven't tackled their rural problem at all, or have done little more than consider it, and certainly I would not want to say anything to discourage them from going into a rural program on the conventional eight and 10-party basis.

When rural customers have had little or no telephone service, they will be perfectly satisfied with eight or 10-party, dial, selective ringing *for a time*. Just how long a time will depend on the people themselves. But *inevitably*, they will begin to want something better. (And it's that word *inevitably* that makes me wonder why I didn't see this thing long before.) I say "*inevitably*" because it is simple American human nature to keep wanting more and better of anything we have.

Maybe a short outline of what has happened to us will give you some idea of what could happen (or is happening) to you. Fifteen years ago, we had 300 old run-down magneto stations — and not one company-owned station outside the city limits.

We began really installing rural phones in '46 and '47, and now have nearly 1,000 rural phones as against 2,000 urban phones — 3,000 altogether. So most of our rural phones have been in service for an average of six or seven years, some more, some less; and in the past two years we have really begun to feel the impact of the demand for upgrading.

Our experience, therefore, leads us to believe that somewhere from five to 10 years after rural customers get service, they are going to begin to demand upgrading. I also believe that from here on, the time lag will decrease. That is, I suspect it will be considerably less than five or 10 years before the rural customers we are installing now will want the upgrades.

At this point let me back up and make a few statements of what I think are facts. Modern rural service, even on the conventional basis of eight and 10 parties, is high cost service — both as to original cost of installation, and as to the rental required to support such investments. I know, furthermore, that on the average toll revenue possibilities are less productive on rural phones than on city phones (lack of businesses in rural areas is, of course, a major contributing factor to this).

I know it costs more to maintain 10 miles of open-wire circuit than it does to maintain ½ mile of cable circuit, and that it is more costly to drive a truck 20 miles in search of a case of trouble than it is to drive one mile.

But I also know that rural service has long since transferred over from a luxury to a necessity (the federal excise tax notwithstanding); that town subscribers now expect to be able to call their rural friends and customers; and that most rural subscribers are not adverse to paying what it costs to furnish them with

"We have one exchange that is strictly rural — no town at all — in which we are furnishing 5-party service on a flat-rate basis all over the exchange area and no eight or 10-party service is provided . . ."

telephone service. And I know our company has nearly one phone out of every three located in a rural area, and the company is still on a reasonably profitable basis.

"A Rural Exchange"

AND THERE is one thing more that I know which may surprise you. We have one exchange which is strictly rural — no town at all — in which we are furnishing 5-party service on a flat-rate basis all over the exchange area and no eight or 10-party service is furnished. That exchange is absorbing its full share of company overhead costs (commercial, etc.). It is absorbing all of its own direct expenses (maintenance, depreciation, interest, taxes, etc.) and is still showing a small net profit.

The plant has been built with a substantial amount of backbone capacity, which means that future station additions should very shortly give it an adequate net earning. The monthly charge for the 5-party service is $4.00 ($4.40 with the luxury (?) tax added), which is about par in this section for eight or 10-party rural telephones. Thus, if the profits don't correct themselves, I believe we shall have little difficulty getting

the rental rate up to where the net will be adequate.

To be fair, it should be pointed out that this exchange has a total area of only about 110 square miles. It is in a light loading district with no rock, and the exchange now has 174 phones connected. Over 90% of these phones are concentrated in about 40 square miles of area, so it is a relatively easy rural area to serve. So, in some respects, the area is not typically rural, but in most ways it is. The point is that such a thing can be done, and it may indicate at least one approach to the problem of upgrading rural service.

Other Solutions To The Rural Problem

AS YOU KNOW, there are other approaches. For example, subscriber carrier may be used not only to provide conventional rural service — in many cases, cheaper than with physical wire lines — but also to provide upgrading. Of 21 channels of subscriber carrier, we are using four to provide Extended Area Service (EAS) between two exchanges, two to provide 10-party rural service, two to provide 5-party rural service, and 13 to provide 1-party rural service.

"An entirely new approach to the problem must be found if we are to provide high grade service in rural areas at costs not greatly in excess of providing eight and 10-party service."

In many cases, using subscriber carrier to upgrade is the only possible way we can get the job done. And we could, and undoubtedly will, use considerably more as time goes on. But it is limited, at least in its present stage of development, by how many channels can be put on one physical, or along a given pole route, or within a given cable. Also, of course, even though it may be cheaper in a given application than conventional wire lines would be, it is still not cheap. Most versions will closely approach, or better, $1,000 per channel, and added to everything else necessary to provide a one-party line, that makes a rather costly telephone.

Naturally, there is also the possibility of using expanded versions of conventional construction — open-wire and cable — to provide upgrading. It is well known that the cost per circuit mile of a pair of wires in a 100-pair cable is cheaper than if the circuit were in a 25-pair cable. In certain applications, this again is undoubtedly the answer, but not the universal one. When cables get too long, the gauge (and the price) must be increased, loading must be added, and, eventually, repeatering, so that these costs rapidly get out of hand also.

Many people thought the line concentrator might be the answer, but it seems to have at least two objections. A few reverting calls tie up the entire unit, which means that it cannot be used too successfully in an area that talks a good bit to other phones within that area. And its limited trunking does not seem to allow for the higher and higher calling rates and long holding times that are associated with present telephone usage. Again, however, in some areas it may be the answer.

New Construction Methods

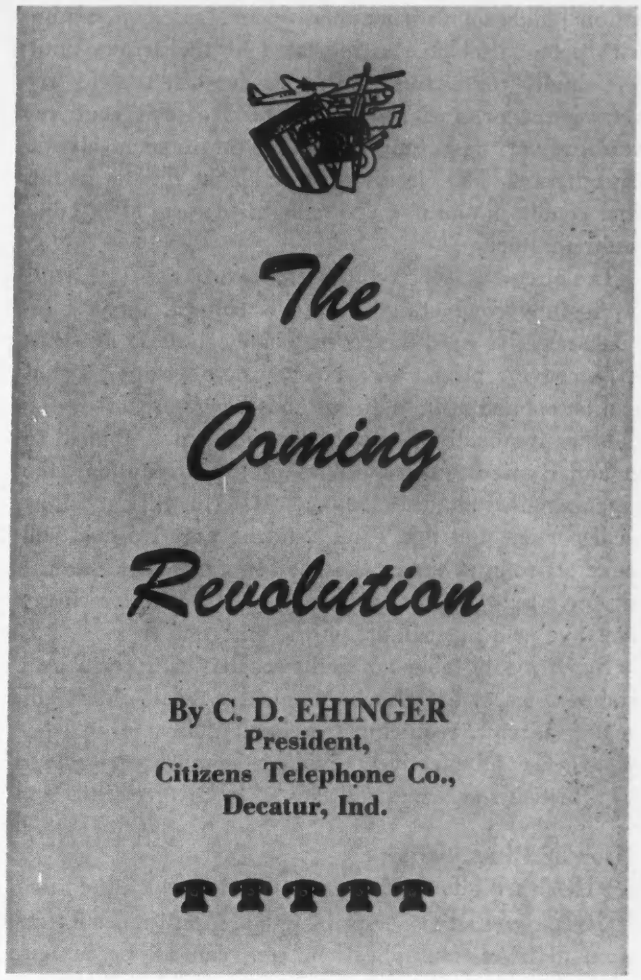
IN ADDITION to the above, there are some relatively new construction methods which seem to have some promise in some applications. Buried cable is nearly as old as the telephone business, but it is only very recently that it seems to be really coming into its own. Lower installation cost, longer life, less maintenance, more stable operation, either all or most of them, seem to be the major advantages. Inflexibility and costly burying conditions in many localities are probably the major disadvantages.

Rural distribution drop wire, and rural distribution cables offer themselves for consideration in some applications. And in general, it can be added that practically all of the conventional construction materials and practices are always improving — stronger line wire, plastic and aluminum-sheathed cables, long-life drops, lower d.b. loss telephones, interceptors to replace fused protectors, and on and on throughout almost the entire list of telephone items. And these improvements either reduce cost or maintenance, or provide better quality, or some combination of these.

But even having called attention to all of this, it is my opinion, as well as that of many small company people to whom I have talked, that while some of the above answers may be applied in some localities, all of them taken together will provide *only temporary relief* to this upgrading problem, and do not provide the ultimate answer.

Many of us think that some entirely new approach must be found. The objective is not difficult to state. This idea should be something that will enable us to provide high grade service in rural areas at costs not greatly in excess of present costs of providing eight and 10-party service. Impossible? No. Difficult? Yes. But one good idea will go a long way toward getting us started to solving this problem.

As much as anything else, this article has been intended to start you to thinking about the problem, and to invite you to write me if you have any idea at all, however wild, and however remotely it may seem to approach this problem. Because (*prediction*) it will be solved! Wouldn't you like to have a hand in that solving? — *Bill Corman.*



The Coming Revolution

By C. D. EHINGER
President,
Citizens Telephone Co.,
Decatur, Ind.

In Chapter Two of his article describing the forthcoming revolution in the art of communications, Mr. Ehinger concludes his comments on the binary digit system and discusses "two-wire" and "four-wire" systems. (Part One of this article appeared in the August 1, TE&M.)

"Use Of The Binary System"

THE BINARY numbering system remained nothing but a mathematical curiosity for many decades. It has only been in recent years that the value of this system has been recognized.

A good example can be seen from the final figure shown in *Table One* (*page* 28, 8/1/59 *TE&M*). To send a four-digit number, such as 1023, by means of stepping switches, would require at least four 10-digit stepping switches.

By means of the binary number system and by using bistable elements (such as a relay), the four digits can be sent by sending only 10 pulses. By means of suitable translating equipment at the receiving end, the binary numbers can be translated into decimal numbers.

We have now gained great advantages. Not only can the superior speed of the bistable elements be used but, in many cases, the actual digits required are smaller or less in number.

To this point, we have been discussing the operations of a telephone relay as a bistable element. Such relays are not used as the main elements in data transmission circuits. Although they can operate in a matter of a few microseconds, this speed is still far too slow for the fantastic speeds required in modern day data-transmission. Electronic circuits are ordinarily used as the bistable element.

Typical of such circuits is a two-tube circuit variously called a "multi-vibrator" or "flip-flop" or "Eccles-Jordan" circuit. The simplified diagram of such a bistable multi-vibrator is shown in *Figure One.*

The basic circuit[1] consists of two tubes in a symmetrical circuit having plate resistor loads R_1 and R_4 and grids cross-coupled to the opposite plate by a high resistance voltage divider R_2R_3 and R_5R_6. The values of the divider resistors and the negative bias voltage is such that, if a tube is passing no current, its plate potential is such that the grid of the other tube is raised to cathode potential. However, when a tube is conducting, the IR drop in the plate load resistor forces the opposite grid sufficiently negative to stop current flow in that tube.

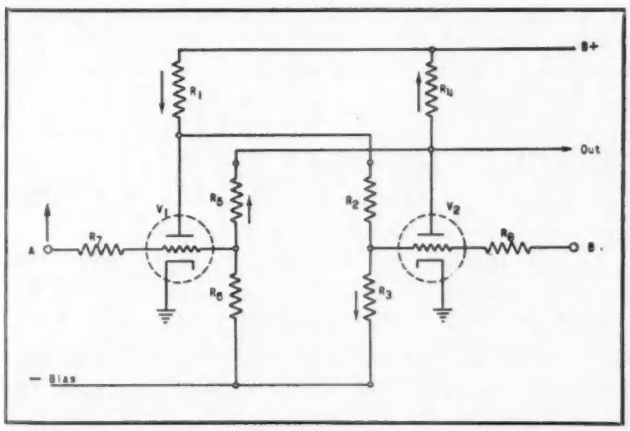


FIGURE ONE.

Let us assume that V_2 is conducting and V_1 is not. In that case, the grid of V_2 is at cathode potential as described above, since there is little IR drop in R_1, the plate resistor of V_1. But also, since the V_2 plate current is flowing in its resistor R_4, the grid of V_1 is forced negative, cutting V_1 off as assumed. This is a stable and steady state which could, theoretically, remain unchanged as long as desired.

However, suppose we introduce an outside trigger signal such as a momentary positive voltage pulse at A. (A negative pulse at B would produce the same results.) This positive pulse action in the grid of V_1 will start current flowing in its plate circuit and an IR drop in the plate resistor R_1. This potential drop is transmitted through the R_2R_3 divider to the grid of V_2, causing its current to diminish. This, in turn, means less IR drop in R_4 and the plate of V_2 becomes more positive, drawing the grid of V_1 more positive through R_5R_6.

By referring back, it is seen that this intensifies the current growth in V_1 started by the trigger pulse. The

action builds up in a cumulative, or "suicide," action with potential change as indicated by the arrows until V_1 is fully conducting and V_2 is cut off, thereby reversing the original state. The speed of this state reversal is very fast, limited only by the inherent circuit capacitances. The circuit is as stable in this as in the first condition and is a very simplified form of bistable multivibrator.

The circuit may be returned to its original state, with V_1 is fully conducting and V_2 is cut off, thereby remade negative until the current in V_1 starts to decrease or, since the circuit is symmetrical, a positive signal can be applied at B. Both methods have been used.

More frequently, a positive pulse signal is applied to A and B simultaneously. With proper precautions, the signal applied to a cathode-potential grid will only draw grid current, but that applied to the negative grid will be effective in reversing the state. In a similar fashion, a negative pulse on both grids will not be effective on the negative grid but will act on the other.

Since the bistable multivibrator has two permanent stable states, it has also been called a "scale-of-two" or scaling circuit, requiring two input pulses for a complete cycle and effectively dividing the pulse rate by two. The British sometimes call this a "lockover circuit."[1]

Uses of Binary Digits

BINARY digits can be manipulated in much the same manner as the decimal system. Addition, subtraction, division, multiplication, etc., can all be accomplished in an easy and simple manner. A full discussion of these manipulations would be useless for the purposes of these articles. Those who may wish to delve further into this particular phase of binary digits are referred to the reference material and to other books and articles which are available through *Telephone Engineer & Management's Educational Division.*

However, I believe it is apparent that the use of binary digits, as a mode of operation, coupled with the use of some type of bistable element allows for extremely high speed transmission of data. Binary digits, commonly simplified to the word "Bits," have become an extremely useful tool.

Actually, the word "bits" has come to mean more than just binary digits. A tremendous amount of basic research and work has gone into the effort to break all communications down to a single, measurable unit. It is actually possible to calculate the information "bits" in any message.

The Bell Laboratories pioneered in this field and spent years of effort in attempting to analyze communication. This work was culminated in 1948 when mathematician Claude E. Shannon, of the Bell Laboratories, published a now famous paper entitled "The Mathematical Theory of Communication."

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[1] *"Industrial Electronics Handbook," edited by Wm. D. Cockrell, par.* 3-88. (*Can be ordered through TE&M Educational Division.*)

"Bits Per Message"

IN THIS paper, Shannon was able to provide a simple formula for calculating information "bits" in any type of message. He also worked out a method to compute the capacity of any information channel in "bits" per second. This tremendously important paper has proved to be the "break-through" in the field, and progress has been rapid since 1948.

As a very small example, recent work has indicated that no human being can speak or understand much more than 50 "bits" per second. We already have computers that are capable of handling and absorbing one hundred thousand "bits" of information per second. In other words, such a computer can accomplish in nine days the same work that a human brain, working 24 hours a day without rest, would require 50 years to accomplish.

It is quite easy to see why so much excitement has been caused by the fantastic possibilities of such equipment. It is also easy to see why we, in the telephone industry, are going to be very much involved in the business of carrying such information from point to point. The information theory, advanced by Shannon, shows that a typical telephone channel of 3,000 cycle bandwidth can *theoretically* carry over 30,000 bits of information a second. With our interconnecting network of such channels, between every business and home in the country and, later, the world, the telephone industry is very much a part of this coming revolution.

"Two-Wire to Four-Wire Systems"

ALTHOUGH we do not ordinarily think of it as such, a telephone instrument is, basically, a four-wire instrument. This is especially true in modern day handsets, and is a function of the inherent design of the actual handset. Nearly all of us can remember bygone days with "hook-switch" receivers which were not an integral part of the transmitter. We can also remember that one of the common fads was to place the end of the receiver directly across the mouth of the transmitter and to allow the circuit to "howl."

While this practice was quite disconcerting to the party on the other end, it actually demonstrated a very basic application of the change from a true "four-wire" instrument to a "two-wire" instrument. Any random noise on the telephone line was received in the receiver, amplified through the transmitter circuit, returned again to the receiver at a higher level, amplified, etc. This process continued until the line would "howl" at a frequency determined by the inherent characteristics of the line and equipment. This was a very crude demonstration of acoustical coupling to such a degree that true two-wire operation was achieved.

In our modern day handsets, there is very little acoustical coupling betwen the transmitter and the receiver. When the handset is held in the correct position, the receiver has practically no opportunity to feed any acoustical coupling back to the transmitting path. Of course, some coupling is deliberately used, by electrical

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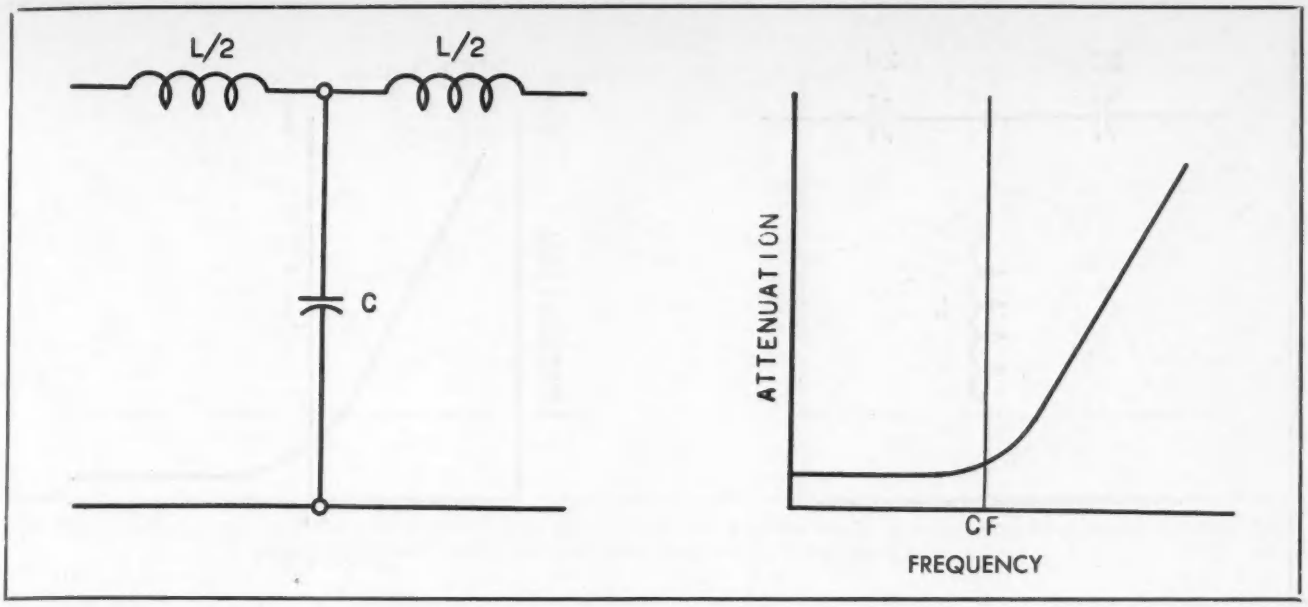

FIGURE ONE:—Basic low pass filter circuit (constant k type) and theoretical attenuation curve. CF is cutoff frequency.

An Efficient Cost Cutter

The Subscriber Carrier System

By JOHN S. REED

CHAPTER TWO of Mr. Reed's article discusses the use of special networks, or filters, in subscriber carrier systems. Chapter One of this article appeared in the April 15 issue of TE&M.

Filters Used In Subscriber Carrier Systems

MENTION has been made of the use of special networks, or filters, in subscriber carrier systems. Such networks are technically known as electric wave filters. They play a highly important part in the successful operation of subscriber carrier systems. They enable currents of voice and different carrier frequencies to be transmitted together over the line and separated at the desired points for reception in any desired manner.

An electric wave filter is a network of inductors (coils) and capacitors (condensers) with specific values selected to present a low impedance to currents in a group or groups of frequencies and a high impedance to currents of other frequencies. These network components are usually potted in containers for mechanical protection and to enable easy assembly in the equipment.

Various combinations of inductors and capacitors are employed in shunt and series combinations in accordance with mathematical formulae which determine the values of these components. In this manner, the networks can be designed to pass currents in one or more specific groups of frequencies and to reject currents of other frequencies. The basic network forms are classified by their functions as indicated below:

(1) Low pass filter — A network of the elementary form shown in *Figure One,* designed to pass currents of all frequencies from zero up to the cutoff frequency. The higher frequencies are attenuated and do not appear in the circuit beyond the filter.

(2) High pass filter — A network of the basic form indicated in *Figure Two,* that passes currents of all frequencies above a cutoff point and attenuates currents of frequencies lower than this critical value.

(3) Band pass filter — A network of the elementary form illustrated in *Figure Three,* that passes currents between two cutoff frequencies and attenuates currents of frequencies below the low cutoff and above the high cutoff.

(4) Band elimination filter — A network of the basic form shown in *Figure Four,* that passes currents below the low cutoff and above the high cutoff and suppresses currents of frequencies between the cutoff points.

For some applications, the basic filters may be applied directly. Usually, however, these simple filters need to be improved by adding capacitors and inductors of the proper values and arrangement in the circuit

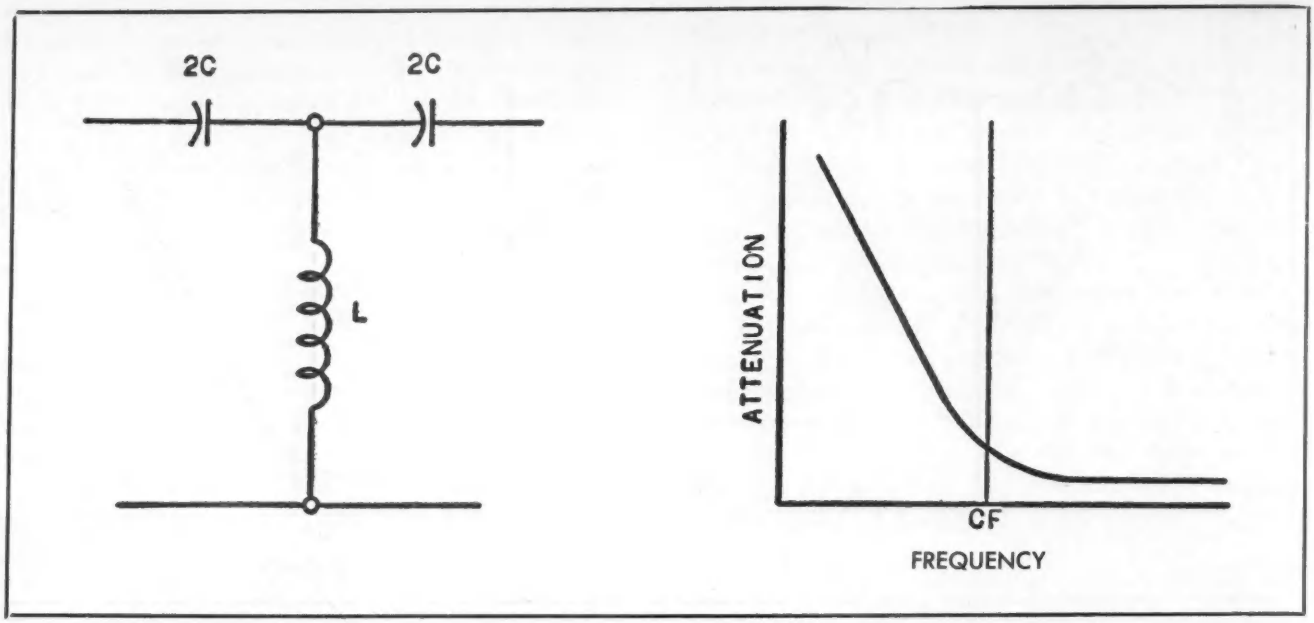

FIGURE TWO: Basic high pass filter circuit (constant k type) and theoretical attenuation curve.

for better balancing, improved impedance and attenuation characteristics and sharper cutoffs. Low pass filters especially must be properly designed to eliminate absorption effects in the carrier frequency ranges which could cause interference from other carrier systems. In other words, the filter must have an attenuation characteristic that is flat out past the highest carrier frequency. Textbooks discussing networks and filters for communication circuits go into considerable detail on the subject. (*T. E. Shea — Transmission Networks and Wave Filters.*)

In studying literature on subscriber carrier equipment the reader will note many terms applied to filters, such as line, transfer, directional, sectionalizing, drop-off, and way station. These terms merely describe the functions of filters or combinations of filters.

The voice pass filter (drop-off, way station, or bridged filter) is commonly employed. This filter is of a relatively simple design that passes direct current for transmission current, hook switch operation, and dialing pulses, and ringing current for subscriber signaling, as well as voice frequencies. At the same time, it keeps currents of carrier frequency out of the telephone. Without the filter, the telephone components would exercise a shunting effect on the carrier currents with resulting severe attenuation and intermodulation.

The voice pass filter should be located at the connection to the main line, not some distance away on the tap; otherwise there would be reflection effects creating a transmission loss at certain carrier frequencies. If the subscriber's drop is connected to the main line, the filter is inserted between the drop and the junction with the line. Where a spur line with two or three subscribers on it is involved, the filter is connected between the spur and the main line. Typical uses of voice pass filters are indicated in *Figure Five.*

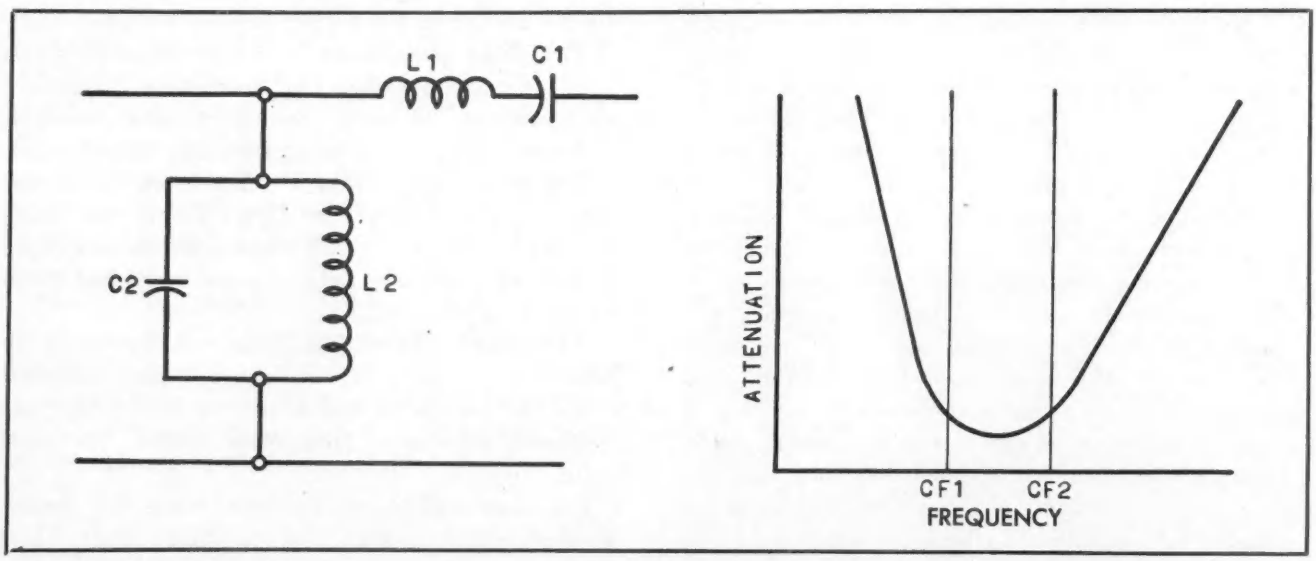

FIGURE THREE: — Basic band pass filter circuit and attenuation curve. CFI is low cutoff point and CF2 is high cutoff point. Currents of frequencies between these limits are passed with minimum attenuation.

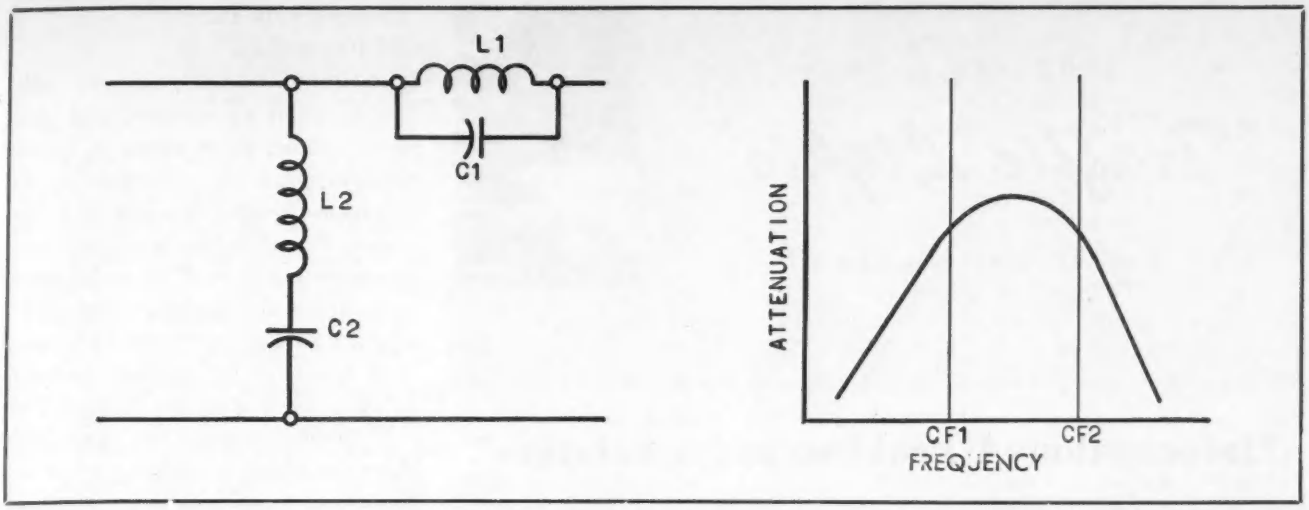

FIGURE FOUR: — Basic band elimination filter circuit and attenuation curve. Currents of frequencies between CF1 and CF2 cutoff points are attenuated and do not appear in the output.

In laying out subscriber carrier systems using carrier equipment of different makes on the same wire circuit, it is important to use voice pass filters that will discriminate against all carrier frequencies. One make of subscriber carrier might have higher carrier frequencies than another make and the voice pass filters might have a high enough cut-off point to pass the lowest carrier frequencies of the other, resulting in severe transmission loss at these frequencies. In addition, as previously explained, filter should have flat characteristic out past highest carrier frequency to prevent absorption peaks.

Line filters, also called line coupling networks, are combinations of low pass and high pass network sections with a so-called crossover frequency which sharply separates the two sets of frequencies passing through the filter. Such filters must have high attenuation as well as high impedance to all frequencies above this crossover point. One use of the line filter is to separate a voice frequency group from carrier channels on a two-wire line for serving subscribers on a separate physical line. Another type of line filter separates car-

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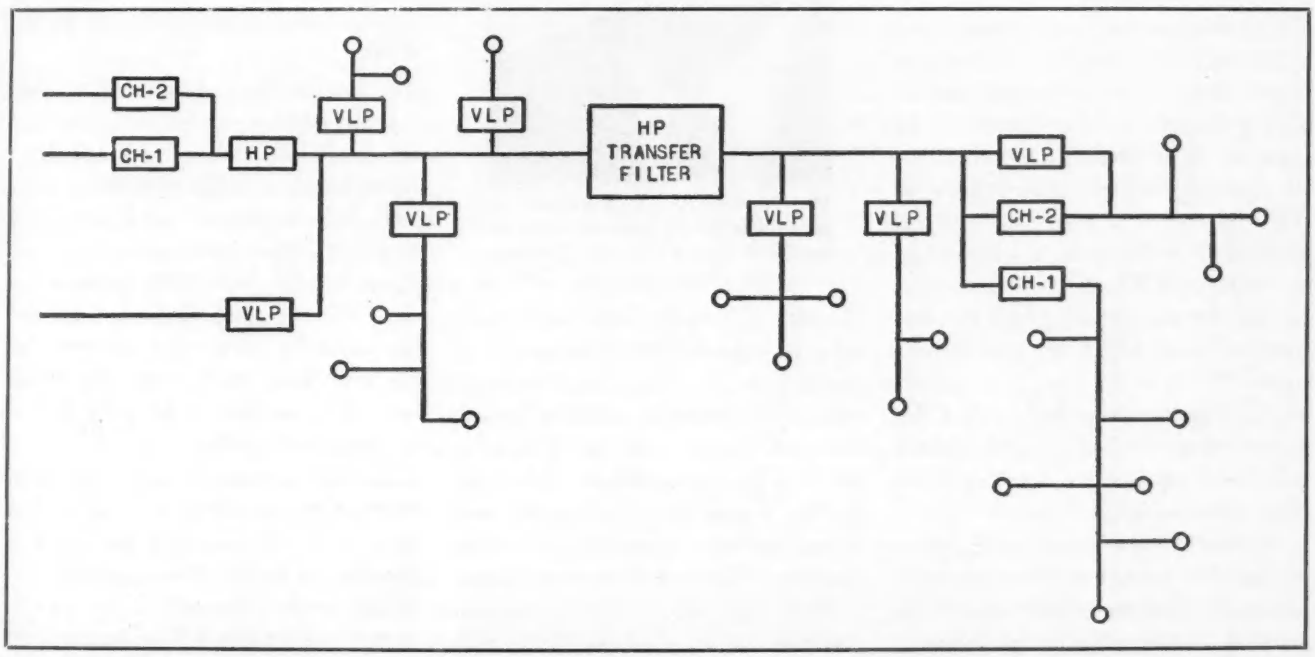
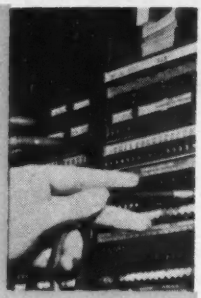


FIGURE FIVE: — Illustrating uses of various types of electric wave filters to obtain desired segregation of channels on a subscriber carrier line. The first voice pass filter (VLP) keeps the carrier frequencies from feeding back into the central office, and the high pass filter (HP) keeps the voice frequencies out of central office channel equipment. Other voice pass filters (VLP) in the drops and lines to subscribers keep out the carrier frequency currents while passing the voice frequency currents to the subscriber stations (circles). The HP transfer filter separates the two parts of the line circuit to confine the two voice frequency groups to these parts while passing the two carrier channels. The last voice pass filter bypasses the voice frequencies around the channel 2 equipment of the subscribers terminal to connect the derived circuit back over the line wires up to the HP transfer filter. CH-1 and CH-2 refer to the channel 1 and channel 2 transmitting and receiving equipment.

"Traffic Lights"

By D. A. Perigo



"Information - A Problem and a Solution"

"With the rapid growth of Direct Distance Dialing and the rapidly increasing cost of Information Service, we may have reached the point where a new concept of Information Service is required."

MUCH HAS been written about Information Service — types of equipment — kinds of records — lighting — Force Adjustment Practices and how to handle them but we can't seem to recall having seen a description of what "Information" is. Instead of assuming that everyone knows what it is, we want to be a little more basic in our approach. Let's look at some history.

When switchboards were just getting started it was more convenient to number the lines than it was to name them — even though names also appeared on the board — as they do on a small PBX today. As the number of subscribers grew it was impractical to keep the name on each line — just as it is impractical on a large PBX today. An alphabetical list was prepared and the line number shown beside the subscriber's name. This was the first Information service. Subscribers still called by name and the boys at the switchboard translated to the line number from their Information.

As the business grew, some smart young man started a "do-it-yourself" plan of having the subscriber call by number — and with this the subscriber directory was born so the subscriber could look up his own numbers. But again the business was growing — and so fast that directories could not be printed and distributed fast enough (regardless of the cost) to keep the name and number lists up to date. It became necessary for the telephone company to accumulate the names and numbers until a new directory could be issued. This, of course, was an admission that the printed directory could not do the whole job — that at least an addendum was needed — and Information has been with us ever since.

The Author, D. A. PERIGO, is general traffic superintendent of the West Coast Tel. Co., Everett, Washington.

With this bit of history we can describe Information as the service through which the telephone company identifies a subscriber with a telephone number he can be called at from another telephone. If this definition is accepted it means the subscriber *directory is a part of our Information service.*

"Directory Is Part of Information"

SINCE TELEPHONES are still identified by number, and people by name, there seems to be no question about the obligation of the telephone company to maintain an up-to-date list of subscribers and their telephone numbers. This is Information. Again we emphasize the *directory is a part of Information* although most telephone people seem to think Information is a part of directory.

Without counting up, we think there are about a dozen types of Information switchboards — some of which have additional variations. At any rate we are sure there are plenty of types but there is some doubt as to their effectiveness. We believe a much more important question is the manner in which records are kept — for search time by operators and clerical maintenance time are the items that break our backs.

The small local manual exchange that has a loose leaf binder with columns cut from the regular subscriber directory and pasted on heavy pages with space for changes and additions has no problem. At the time such an exchange is converted to dial operation, however, problems begin to develop.

If, at the time of conversion, this exchange becomes a Community Dial Office (CDO) with operator office functions at an office of another company, Information service is furnished as a part of the Operating Agreement. There are two principal problems for the CDO company — first, what are the mutually acceptable charges for the service — and second, how can the proper service order information be furnished to the operator office? Most Bell companies have a standard contract price for the service — but make sure of what this is *before* a decision is made. Also make certain of the method by which the service order information will be transmitted and *keep it simple but accurate.*

The operator office to which Information is transferred has a problem in taking on the additional work. It may be simple, or, depending on circumstances, it may be the "straw that breaks the camel's back." Prob-

A Bit About "Traffic Lights"

PEOPLE who have worked with me for any length of time have heard me say (at least once) *"If any job is worth doing at all, it is worth doing right."* That sounds good when I talk about another person's work, but when I first considered the job of doing a few hundred words for this department each month, I began to wonder how "right" it would be done.

This concern was with me when your editor pushed for my decision. I thought if I told John my basic philosophy was "every man is as lazy as he dare be," he would say, "Well, Al, I'm sorry I bothered you, because in this business we must meet deadlines twice a month."

My next approach was to point out that I have a tendency to be rather critical — particularly when I find one company using a routine just because another company uses it, or when I run across claims made for certain manufactured items that can be very misleading.

After John and I kicked a few of my beliefs around for a bit, the idea for a new Traffic Department feature in TE&M looked better — and the fact that I am writing this, of course, tells you that John convinced me the job should be done and I should do it.

"Selecting A Name"

WHEN IT WAS agreed that I would write a Traffic Department feature for TE&M we then started thinking of a name for the feature and I told John a little story which I'll repeat here.

Some 30 years ago I made a speech in which I pointed out some problems of the day and urged "full speed ahead" with the solutions. I was followed by a man who was a capable attorney, former Lieutenant Governor, and a golden-voiced orator. He leaned over to me while the chairman was introducing him and said "Please don't get mad at me until I have time to explain what I'm about to say up there."

He then took each problem I had discussed, agreed a solution was required, but in each case held up a restraining hand, and said, "Let's put up a *Traffic Light* and turn on the red."

He pointed out the need to keep traffic orderly instead of allowing it to move helter-skelter, full speed ahead. He pointed to the dangers of speed — the safety of orderliness. He showed how dangerous it was to put someone behind the wheel who knew how to get started and to steer but didn't know how to apply the brakes.

That gentleman's speech made what I said seem ridiculous. His fatherly talk with me afterward did me a world of good, and over the years has meant much to me. The headlong rush of highway traffic, a direct illustration of his philosophy, tells the story — but look at our business world and see how many businesses have crashed because of a headlong rush. A *"Traffic Light"* may have saved them. My friend has long since passed from this world, but I want to honor the late Eddie Beidleman of Pennsylvania by calling this column *"Traffic Lights."*

Now, what will this column be about?

(1) "Traffic Lights" will be devoted to telephone traffic — the handling of originating calls regardless of whether they go across the street, across the nation, to the other side of the world, or to another planet, regardless of whether they are completed by an operator or by mechanical or electronic means.

(2) We will not attempt to prepare digests or reviews of operating practices with questions and answers. However, we may suggest a change in a practice, or in the method of placing practices in effect. For example, I might suggest that some Bell System man explain why it is a good idea to arrange prepay coin box trunks so the initial coin is *not* returned automatically when the operator answers.

(3) We are not going to run a Force Adjustment school — but once in a while I may express an idea about efficient operation.

(4) We are not going to develop a Service Program — but now and then I may mention a *gimmick* someone has found useful.

(5) There will be no Training Programs developed as such — but I may ask you why you train operators and *assume* that your Chief Operator is well trained — or even *assume* that she is *qualified* to train others.

(6) "Traffic Lights" will promote any good traffic idea. If it comes from the Bell System officially and we agree with it we will promote it. If it comes from an *individual* in the Bell System and we agree, we will promote it. On the other hand if it comes from a very tiny Independent — and we think it is a good idea, we will promote it.

None of this means that we will set ourselves up to be the judge and jury. We will discuss, possibly try, and attempt evaluation of the idea.

We have indicated we may be critical at times. Is it necessary to add that we also expect to be criticized? We not only expect it — we solicit your criticism. We consider criticism an honor, because if you thought we were hopeless you wouldn't waste your time.

This then is the "special introductory offer" — the facts about the birth of this column, its name, and its part in your telephone life. We hope you like it . . . Let us know. — *D. A. Perigo.*

ably the biggest question is whether the various exchange listings should be isolated or interspersed because this may have the greatest effect on "search time."

As a *general* rule (again each case is different) where there is a reasonable distance between exchanges, like a 25¢ toll rate or more, there will probably be savings in search time if each exchange is listed separately. Where the built-up parts of the exchanges are contiguous, such as Extended Service Areas of approximately the same size, interspersion may be what saves search time.

If you are adjacent to a large metropolitan area and have extended service to it you may conclude that all exchanges should be interspersed *except* the large multi-office exchange. Sometimes, or perhaps we can go so far as to say *usually*, these answers become obvious when you have reasoned out the conditions.

If the answers are not obvious, then, by all means, obtain some actual data *before* you decide. This can be done by recording certain data concerning the present Information traffic. What you want to know is: —

(1) *How many customers name the town when asking for a number?*

Example — customer requests "The telephone for J. R. Williams on Grand Street, *Independence.*"

(2) *How many customers know the town when asked by the operator?*

Example — operator asks "In what town, sir?"

In the latter case the customer may know, be doubtful, or not know. If most of your customers give the name of the town or know it, then your listings should be isolated by exchange. In this problem consideration should also be given to the reasonable future. Two towns may be 10 miles apart now but each is growing toward the other. They may have the same street names. Rural subscribers may have a post office address in one exchange but actually be located in the other. If the results of your actual study are not predominately in favor of isolation by exchange the above considerations would cause one to lean toward the interspersion.

"A Tip For You And Your Traffic Department"

For the balance of this year "TRAFFIC LIGHTS," authored by D. A. (Al) PERIGO, general traffic superintendent of the West Coast Telephone Co., Everett, Washington, will appear as a regular feature of "Telephone Engineer & Management" on the 15th of each month. Starting with the January 1, 1960 issue, "Traffic Lights" will become a regular feature of each issue of TE&M.

And here's a tip! There is no better time than right now to enter personal subscription to "Telephone Engineer & Management" for key members of your Traffic Department. During the coming months Mr. Perigo will be discussing many timely traffic subjects and presenting ideas and suggestions your Traffic Department can put to good use — ideas that will improve over-all efficiency of your traffic operation of today and tomorrow.

To enter personal subscriptions to TE&M for your employes, just send your list showing (1) Employes' Names, (2) Employes' Titles, (3) Company Name, and (4) addresses to which magazines are to be mailed. We will bill you at $4.00 for each one-year subscription. If 5 or more subscriptions are ordered the charge will be reduced to $3.50.

If rotary files are used there will be very little, if any, difference in clerical costs whether the exchanges are isolated or interspersed. But if printed records are used and you are getting them from your regular directory printer you may be sure the costs will be much higher unless your Information set-up is the same as the directory — regardless of which way.

"A New Concept Needed"

IT SEEMS to me that with the rapid growth of DDD and the even more rapidly increasing cost of Information service we may have reached the point where an entirely new concept of Information is required and I submit the following for your consideration.

The increase in subscriber dialing may dictate a complete alphabetized Information record centralized in a code area with direct access by subscribers from any dialing point. For example, a subscriber in Washington, D. C. who wanted to call a friend in Portland, Oregon, could dial 503-113 and reach the 503 area Information center for his number. In many parts of the country this would have to be a joint undertaking between several Independents and the Bell System, and would require close coordination and cooperation between all concerned.

With such an Information center it would be possible to have Information records set up at a central point and Information operators from other exchanges in the same code area could access the records by keying codes into closed circuit TV which will display the proper page on a screen in front of the Information Operator at the distant office.

Each page would be indexed and furnished to the various positions so the operator could key up the proper number to reach the page. Many operators could have access to the same page at the same time. Through this method there could be a completely interspersed alphabetical list with only one record, thereby eliminating all reproduction costs.

With this method only one circuit per Information position would be required to the record office, while at the record office there must be a trunk for each page to be viewed. The equipment required at the local office would require only answering equipment, a viewing screen, and a key set.

Is this solution too simple—or does it have some advantages when viewed from an industry, rather than a company, viewpoint? — *D. A. Perigo.*

COMMERCIAL DEPARTMENT NOTES

by ALLAN R. STACEY

"Out of The Mail Bag"

The author of TE&M's "Commercial Department Notes" has been busy with letters from readers discussing such subjects as customer-owned instruments, customer credit, bulk rates for color telephones, teenage telephone rates, and pre-wiring of customer premises.

THIS ISSUE we'd like to talk about things that have come in the mailbox. Of particular interest are comments on customer-owned telephone instruments, customer credit, bulk rates for color telephones, prewiring of customer premises and teenage telephones.

Own Your Own Telephone

ONE OF OUR subscribers forwarded a clipping from a Mexican newspaper in Tijuana, Baha California. The local hardware store advertises stoves, water heaters, doors and telephone intruments for sale. The telephone portion of the hardware store ad reads as follows:

TELEFONOS IMPORTADOS
En Colores Rosa, Azul y blanco.
Eficientes 100%
Instale Una Extension
Por Solamente 19.95

This hardware store is apparently offering imported telephones in rose, blue and white to be installed as an extension for only $19.95. At that price perhaps we should go down and buy a few for the telephone company.

Naturally, there are good reasons why the American telephone industry does not encourage subscriber ownership of telephone instruments. However, we'd be very happy to hear from some of you foreign readers as to what the practice is in your country and why you have chosen to permit the subscriber to own the telephone.

The author, ALLAN R. STACEY, is vice-president of the Sunland-Tujunga Tel. Co., Sunland, Calif.

More About Customer Credit

IN THE March 1 issue of TE&M we discussed the question of how far you extend customer credit. You may remember that we had the specific problem of deciding whether the new applicant must come to the business office or whether we would accept his application over the telephone or through the mails.

Henry L. Burton of the Virginia Telephone & Telegraph Company was kind enough to drop me a letter shortly thereafter sending copies of three forms that his company had just then inaugurated for sending to new subscribers in lieu of having these subscribers make additional visits to the commercial office.

Here is a copy of one of his forms:

Dear .....:

The application which you recently filed at our office for telephone service has been processed and assignments completed.

In accordance with our Company's standard policy, it will be necessary that the following charges be paid before telephone service can be established:

Service Connection Charge	$
Local Exchange Service	$
Non-recurring Charge	$
Tax	$
Deposit	$
Total	$

We shall appreciate your remitting this amount in order that final arrangements can be made to complete the service order for actual installation. Please refer to the above Service Request Number when making your remittance. We appreciate your application for telephone service and are looking forward to serving you.

Very truly yours,

I showed the copy of this letter to one of my operating friends and he said, "In my territory I would lose more revenue because of applications not filed when this letter was received than I would gain by obtaining the charges in advance before connecting the service." What do you readers think?

Henry Burton has been kind enough to promise to send some statistics regarding the effectiveness of this and other letters when there has been enough experience to formulate an opinion. I'll keep you informed.

Colored Telephone Bulk Tariff Rate

SEVERAL operating companies have asked the question as to whether there is a reduction in tariff price when installing colored instruments in PBX's or other locations where large quantities are placed. On a vacation recently I stopped in and visited with the folks at Bell of Indiana and learned of their filed tariff rate for colored telephone installations in bulk. They are using a filed rate which provides a discount as follows:

One or two instruments	— $9.00 each
Three to eleven instruments	— 7.00 each
More than eleven instruments	— 5.00 each

Prewiring of Customer Premises

WE WERE recently asked what can be done to encourage architects and contractors to place more

Please turn to page 54

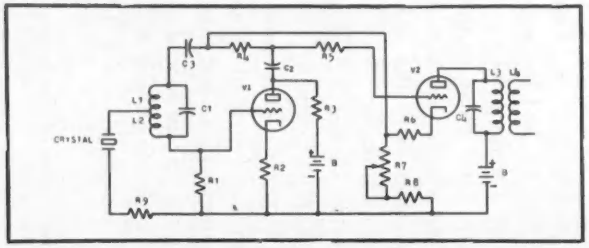
TELEPHONE ENGINEER & MANAGEMENT's

ELECTRONICS NOTEBOOK

By LEO G. SANDS

3.2-20 CARRIER FREQUENCY OSCILLATOR

This is an oscillator circuit employing two triode tubes, which is used in Lenkurt 45 carrier systems. It is crystal controlled in order to maintain frequency stability. V_1 is the oscillator which employs a modified Hartley circuit tuned to resonance



by C_1 shunted across L_1-L_2, a tapped coil. The tap of the coil is grounded through a crystal and R_9. The circuit operates at the resonant frequency of the crystal, which, at this frequency only, acts as a low-value pure resistance. A voltage is developed across the crystal and L_2 which induces a voltage of approximately the same value, but 180° out of phase, across L_1. At other frequencies, the crystal presents a high impedance. The operating frequency is therefore stabilized by the crystal which is itself stabilized by a temperature-controlled oven.

V_2 is an amplifier stage which has no effect on the operation of the oscillator. It isolates the oscillator and provides a better match from the high impedance of the oscillator to the low impedance which the circuit feeds. V_2 is used in a modified cathode follower circuit.

Part Three
3-2-18

August 15, 1959
TRIODES

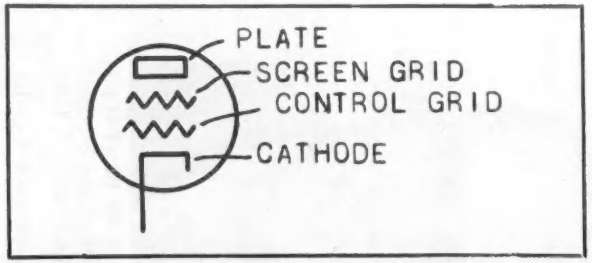
TELEPHONE ENGINEER & MANAGEMENT's

ELECTRONICS NOTEBOOK

By LEO G. SANDS

3.3 TETRODE

When a second grid is added to a triode, it becomes a tetrode. While the original grid, called the "control" grid, is biased negative with respect to the cathode, the "screen" grid is made positive. It



accelerates the flow of electrons from the cathode to the plate, increasing the gain of the tube. Also, because the screen grid is ordinarily by-passed by a condenser to ground, it shields the grid from the plate and reduces the interelectrode capacity between grid and plate.

3.3-1 TETRODE AMPLIFIER

Referring back to 3.2-20 we find that when the plate and grid circuits of a triode are both tuned to the same frequency, oscillation occurs. But, when a tetrode is connected in this manner, oscillation does not occur and the circuit is an excellent high-gain amplifier. This is because of the presence of the screen grid which is shown here by-passed to the cathode by C_3. Thus, by using a tetrode, it is possible to achieve high amplification without unwanted instability and oscillation.

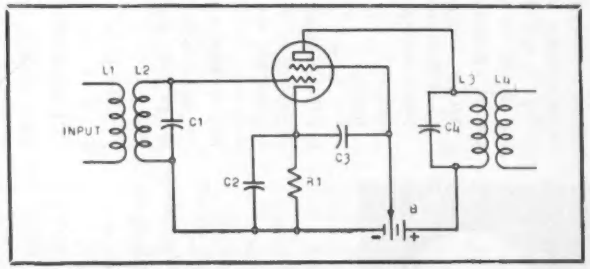
Part Three
3-3-1

August 15, 1959
TETRODE

TELEPHONE ENGINEER & MANAGEMENT's

ELECTRONICS NOTEBOOK

By LEO G. SANDS



In this circuit, an amplifier, bias is provided by R_1. The voltage developed across R_1 is caused by cathode current and raises the cathode positive with respect to the grid, making the grid negative. C_2 by-passes the signal. While dropping resistors are ordinarily used to provide screen voltage at a lower level than the plate voltage, a tapped battery is shown in the schematic for the sake of simplicity.

The "Electronics Notebook" is a regular feature of each issue of "Telephone Engineer & Management." We urge all readers to read and file these informative 'Spec' book sheets for future reference. If you missed previously published sections of "Electronics Notebook" write TE&M for tear sheets.

Part Three
3-3-2

August 15, 1959
TETRODE

More Data For' Your "Electronics Notebook" on Page 53.

More Data For' Your "Electronics Notebook" on Page 53.

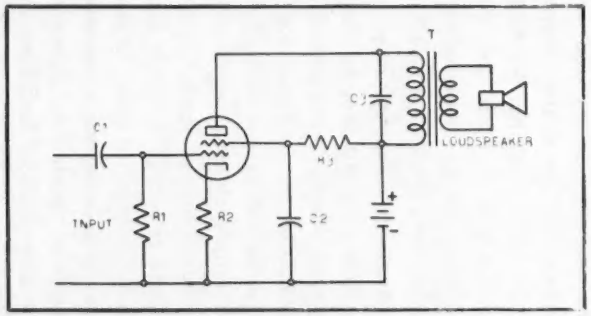
TELEPHONE ENGINEER & MANAGEMENT's

ELECTRONICS NOTEBOOK

By LEO G. SANDS

3.3-2 TETRODE POWER AMPLIFIER

Tetrodes are most widely used as power amplifiers. Types 6V6GT and 6L6, which are classed as "beam" power tubes, are popular as audio output amplifiers. In this circuit, (Western Electric 100F) the signal is fed at high impedance to the grid through C_1. Bias is obtained by the drop in the cathode resistor R_2. The output is derived through transformer T.



3.4 PENTODES

Not satisfied with two grids, we added a third grid to the electron tube, creating a pentode. The fifth element (third grid) is placed between the plate and the screen grid. The pentode operates in a manner similar to a tetrode. The extra grid, known as the suppressor grid, prevents reverse current between the screen grid and the plate, which occurs in a tetrode.

Electrons flow past the three grids to the plate at high speed. When they strike the plate, secondary

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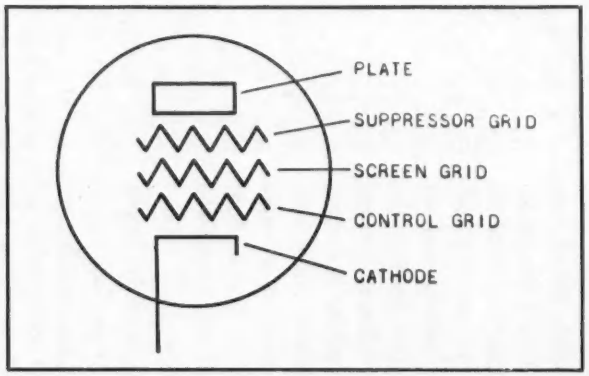
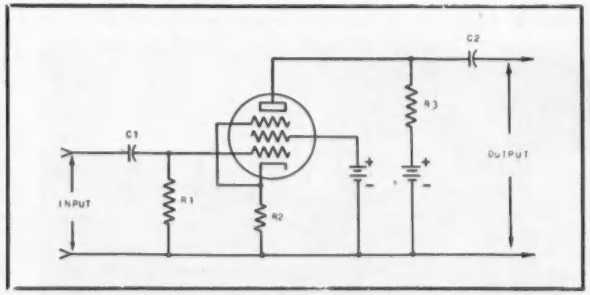
By LEO G. SANDS



emission is caused and if it were not for the suppressor grid, these electrons would flow back to the screen grid. Since the suppressor grid is highly negative with respect to the plate, it repels these secondary electrons and they return to the plate.

3.4-1 PENTODE AMPLIFIER



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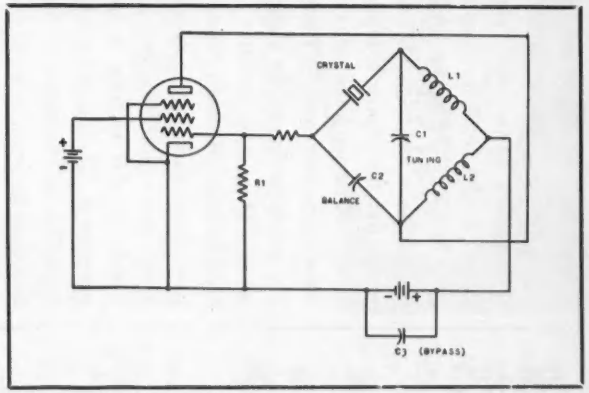
ELECTRONICS NOTEBOOK

By LEO G. SANDS

Pentodes make excellent high-gain amplifiers, the amplification factor of some types being in excess of 100 times as much as in triodes. The suppressor grid is generally connected to the cathode. The screen, as with tetrodes, is connected to a positive potential. The plate too is connected to a positive potential through the load R3.

3.4-2 PENTODE OSCILLATORS

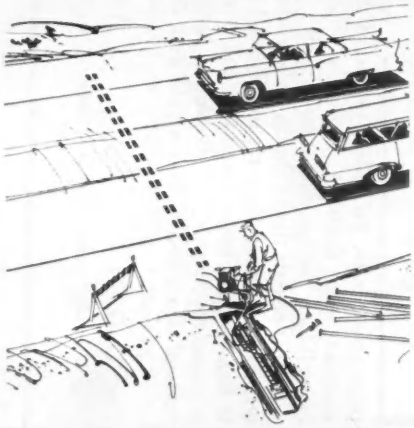
The pentode has many applications. It can be used as a pentode or its grids may be paralleled and



used as a triode. To illustrate one of its unique capabilities, the drawing shows a crystal-controlled capacitance bridge oscillator circuit.

In this circuit the bridge is balanced at frequencies other than the resonant frequency of the crystal. This is because the crystal looks to the circuit simply as a capacitor within the balanced bridge. Thus, no voltage is applied between grid and ground.

EASY, LOW-COST WAY TO RUN PIPE UNDER STREETS AND WALKS



Greenlee Hydraulic Pipe Pusher

Traffic proceeds as usual when your piping for underground cable crosses under the street this simple timesaving way. Model No. 790 shown pushes ¾" - 4" pipe about two feet per minute with power pump. A small ditch in the parkway accommodates the pipe pusher — streets and walks remain undisturbed, total job time is cut to a fraction. Ask your supplier for details or write for free literature.

OTHER GREENLEE TIMESAVING TOOLS FOR TELEPHONE WORK: UTILITY CHISELS, POWER BITS, BRACE BITS, BELL HANGERS' DRILLS, ANGLE SCREW DRIVERS

GREENLEE TOOL CO.
1777 Columbia Avenue
Rockford, Illinois

GREENLEE

telephone outlets in one-family residences and apartment buildings.

As you are aware, it seems to be the practice to put one "centrally located" outlet for telephone service in new home construction or to ignore the problem entirely. This means that when the telephone company comes along with a package sales effort it is sometimes extremely difficult to wire the premises for more than one telephone. This is particularly true in the case of concrete slab home construction. Once the slab is down, it is almost impossible to make changes. Likewise, this is true in the case of apartment buildings designed for bachelor apartments or small family accommodations.

There are several solutions. When confronted with new home construction using concrete slab floors, one company I know contacts the builder and, at the appropriate time in the construction of the house, places additional telephone outlets without charge. This company justifies the cost on the basis of obtaining more outlets and thereby selling more extensions in the house and being able to do a much less costly job at early stages of construction than would have to be done after the house was completed.

Another company actually has a filed tariff rate for prewiring at approximately 50% of the cost for installing a jack after completion of the house. At this 50% tariff rate the company actively seeks out builders and contractors and sells this service in the frame construction stage of the housing. An example of such a rate is $2.50 per outlet installation charge compared to a $5.00 installation charge for a jack.

Another company faced with a multi-story apartment housing development found, upon examining the plans, that the architect and builder were providing one centrally located outlet in each apartment and the construction was of such a nature that it was extremely difficult for a telephone installer to make an additional run. The company's experience in previous apartments constructed by the same builder had been that persons moving from a two or three telephone installation in the same territory into these apartments had been forced to reduce their service to one telephone because of the objection of the owner-manager to making additional telephone runs.

As a result of working closely with this builder, it was possible to obtain three outlets in each apartment for the same cost to the builder of the originally proposed single outlet.

In order that more companies may share in this type of benefit, would you please send me any practices that you have found to be effective in prewiring.

Teenage Telephone Rates

SEVERAL people have asked what can be done about a special rate for teenage telephoners. Here is one solution.

A rate has been developed for a teenage telephone combined on the same line with primary adult service. For the sum of $2.50 per month the teenager receives a package consisting of an extension telephone in his own room, his own telephone number and a listing in the directory. The rate was developed as $1.00 for the extension, $1.00 for the primary number and $.50 for the listing.

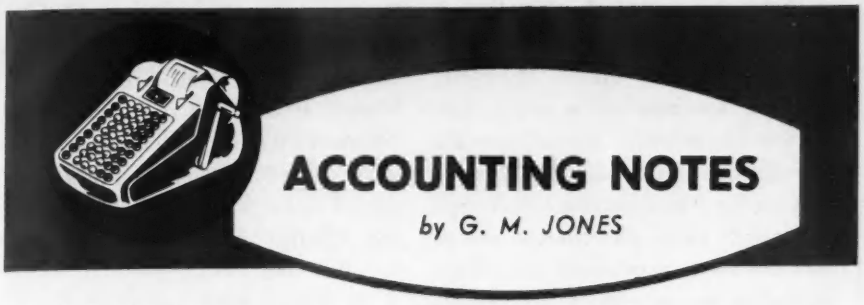
Taking advantage of the particular type of equipment used, this company bridged the circuit on a two-ring for the teenager and one ring for the adult on the same primary service line. What this represents is multi-party service into one premise with a division between teenager and adult.

I am trying this service personally in my own home with two daughters and find it a real relief to have this presorting of telephone calls.

Here, also, could be a large untapped market for our telephone service. In fact, one company estimates that it should be possible to sell this service to as high as 20% of the total teenage market.

Do any of you have interesting ideas on special treatment telephone lines for teenagers?

Well, enough of answering the mailbox for now. Next issue we'll talk about one company's excellent experience in using the Teletrainer. See you then . . . . *Allan R. Stacey.*



Cycle Billing For The Small Company

By billing a few subscribers on each of several regularly scheduled days throughout the month, you will eliminate the month-end rush to get the bills ready and mailed.

TELEPHONE companies of all sizes as well as businesses in a wide variety of industries have found that one way to escape the heavy workload in end-of-the-month billing is to adopt some form of cycle billing. Under a cycle billing scheme, a few of the firm's customers are billed on each of several regularly scheduled days throughout the month so that during a month's time they all get their bills; but there is no month-end rush effort to get the bills ready and mailed. These remarks are addressed to the remaining smaller companies who have stayed with end-of-month billing, either because of a lack of information about cycle billing or because their particular investigations show little to be gained by changing from another method.

For a very, very small company, the once-a-month load may not be enough of a burden to create any problems. But as the business grows, it becomes difficult to get the bills out and still do the other things that are necessary in a small business office. One or two days' heavy concentration on bills and bills alone gets tedious and leads to clerical mistakes. And the other office work piles up. The usual solution, at first, is to stay late, work on Sunday, and berate one's own obtuseness in taking this kind of a job.

At a further stage of growth, part-time help is hired and some sort of mechanical aid adopted to speed up bill preparation and envelope stuffing. But part-time help is not always available, dependable, or accurate, and posting equipment to relieve the month-end load is largely idle during the rest of the month. The adoption of a cycle billing scheme, although it introduces some new problems of its own, gets around these difficulties.

A further effect of adopting cycle billing is to reduce the peak amount "invested" in subscriber receivables. After the system is in operation long enough for customers to get used to paying their bills at specified dates, the inflow of collections all month long works to reduce the total amount due from subscribers, while toll charges, etc., are being added to their accounts.

Under a once-a-month billing procedure, the amount due keeps building up, until shortly after the billing date, when collections come in a rush. Cycle billing substitutes a number of small receivables peaks for one big peak, and a number of small cash peaks for one big peak. *Figure One* illustrates, in a crude way, the effect on amounts due from customers. Generally, the average amount due will be no less, but the peak amount is smaller, and cash is available from collections uniformly through the month.

There are still many subscribers who adhere to their accustomed payment patterns (they pay at the first of the month regardless of when their bill is received) and because of these folks there is still a slight peak in collections shortly after the first. The only effective inducement for payment according to their cycle date is a discount for payment at the desired time. But since they are in the minority and since any discount pattern must apply to all subscribers, it is less costly to accept these few recalcitrants, who eventually may be won through education and gentle persuasion.

Operation Of The System

THE ACCOUNTS are grouped into cycles, the number of cycles depending on the number of work days regularly available on which billing

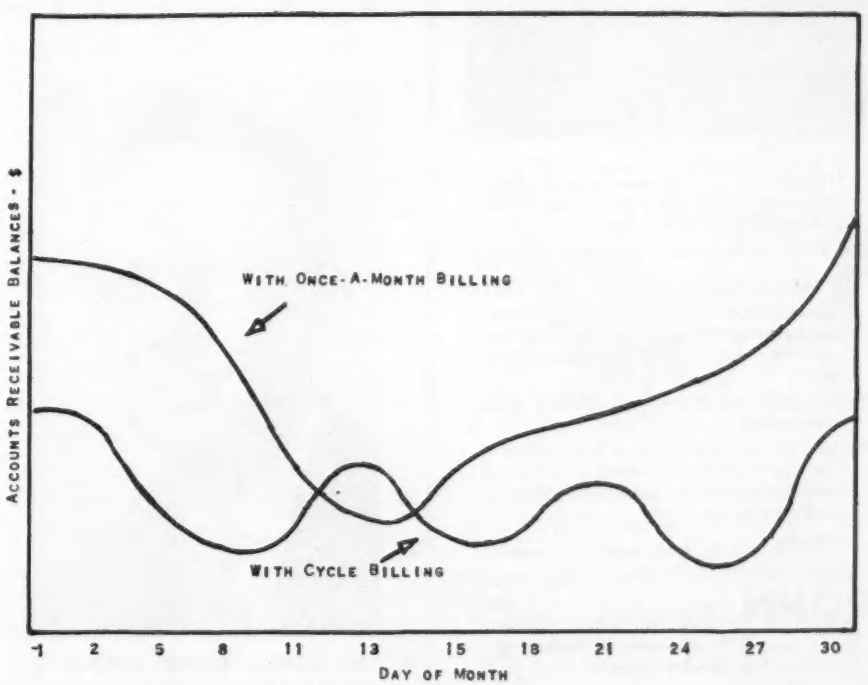
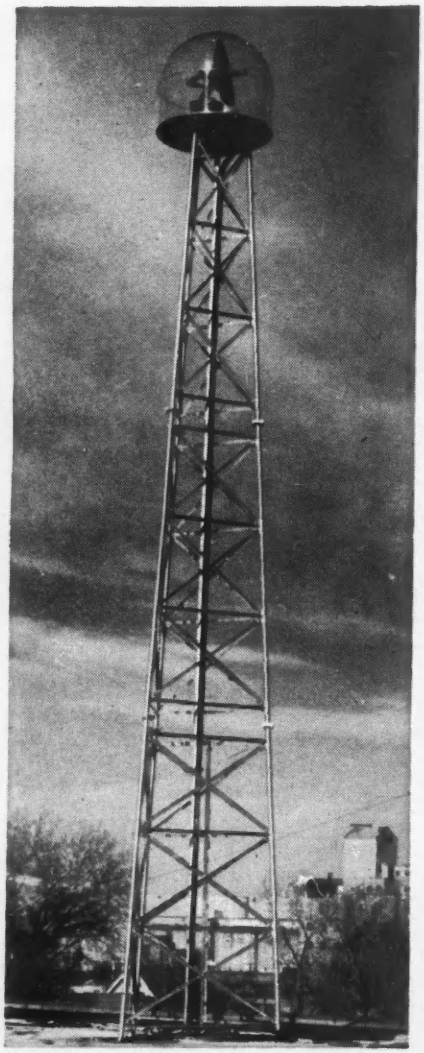


FIG. ONE: — Total amount due from customers, under once-a-month billing versus cycle billing.

ROHN
SELF SUPPORTING
COMMUNICATION TOWER



(This radar weather tower of KSTP-TV, Minneapolis, uses the 3 lower sections of the ROHN "Self-Supporting" tower. Note construction, design and size.)

HERE ARE THE HIGHLIGHTS OF THE ROHN "SS" TOWER:

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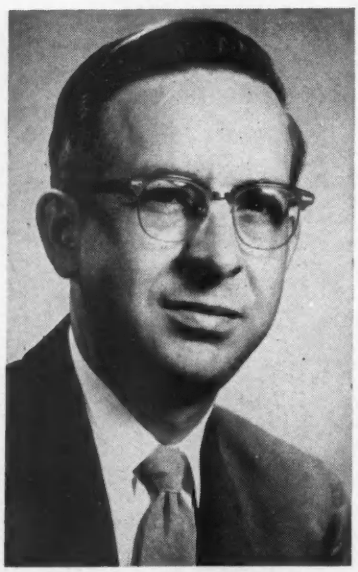
could be done, and the number of subscribers served. Even in a one-woman business office, breaking down the few hundred accounts into four cycles helps to spread out the load through the month. At the same time, each cycle must contain enough accounts to make an efficient run of work for the person doing the billing. Depending on the size of firm, cycles may be as few as four or as many as twenty.

The basis for grouping may be by subscriber number, but an alphabetic grouping makes better provision for a uniform distribution of additional future customers, independent of any station numbering plan or number change pattern. With an alphabetic grouping, a 10% increase in number of subscribers will mean a nearly uniform increase of 10% in each control group. But since toll calls are most easily and reliably recorded by number, the natural grouping is by number rather than alphabetically.

Each day, all slips and documents representing transactions (toll charge slips, cash collection memos, adjustments, refunds, and so on) are totalled by type of transaction to establish accounting totals ("proof" totals). The transaction documents are then sorted by controls (cycle groups) and adding machine tape totals are taken for each control. The control group totals are proven (in total) against the previously obtained transaction totals (in total). These control group totals are entered in control accounts — one such account for each cycle of subscriber accounts. The detailed transaction slips are then sorted down within controls for posting (filing) in individual customer account files.

As each cycle matures, the accounts in that group are drawn from the file, and are billed with the regular monthly charge plus any applicable extras, less any payments or adjustments, as indicated by the transaction documents for each customer. These slips represent all transactions occuring since the last billing date. The customer record retained by the company is the same as in any other billing scheme.



The Author, G. M. JONES, is associate professor of Accounting & Financial Administration, Michigan State University.

Problems In Control

THERE ARE two kinds of control problems arising out of human handling of transactions and collections: employes may make intentional or unintentional errors. An effective system of control over receivables is designed to *prevent* errors of either kind as well as to discover and correct them after they have occurred.

One of the usual methods of controlling accuracy in keeping customer accounts is to make a frequent comparison of the detailed records of customer balances with a general summary record of those same amounts, arrived at by a different route. This is the same sort of comparison that is made for supplies and parts inventories, payables, and so on. Under a once-a-month billing method, a full and complete reconciliation of the detailed accounts with the control account is made each month. All the information about all the accounts is brought together at one time. Any discrepancy between control account balance and the detailed accounts requires a tedious search through all the accounts to find the source of error.

The assumption underlying reconciliation of the detail to the control account is that there is much opportunity for error in posting or filing the detailed transaction and comparatively little chance for error in

posting or recording the summary information. One of the reasons is that each day's customer transactions, in gross, must be proved against some comparing gross figure. To be specific, the total amount shown as being collected on subscribers' accounts on any day must equal the cash from that source; the total amounts charged to their accounts must equal the revenues (the earnings, not the receipts) recognized that day.

The problem in control arising in billing by cycles is that there is at no time a full and complete reconciliation of all subscriber accounts with the total of receivables due according to the master control account (in the general ledger). However, the accounts in the cycle being billed on one day are reconciled to the control account for that cycle. In this way, each cycle is fully reconciled once a month. In addition to the one cycle which is reconciled, there are all the other cycles, which as of that time, are unproved. If a full-scale proof of account agreement is desired (for audit purposes, for instance) it is necessary to go through all this unbilled media to obtain the detail supporting the master control account total.

In proving of accounts as the cycles rotate through the month, we are doing the same thing that is done with supplies and parts inventories, where a few items are inventoried each day for comparison with and correction of the records.

A second problem in control is that people are prone to make incorrect sorts of documents; to put a toll charge slip not only in the wrong customer's file but also in the wrong control; or to include it in the wrong control, but upon finding the slip there later, to move it to the right place without noting that because of it, the control total recorded was incorrect. Sometimes, a charge is found for an account number which does not exist; the clerk may lay it aside without adjusting the control total for the necessary correction. This kind of error is unintentional, of course, but it often results in irritated customers and sometimes downright loss. — *To be continued.*

Howard Smith of Lincoln Tel. & Tel. Dies

HOWARD C. Smith, 62, chief switchman of The Lincoln (Nebr.) Telephone & Telegraph Co., died of a heart attack while at work on July 17.

Mr. Smith was born at Harvard, Nebr. and started work with the company there as a lineman in 1917. Later he was wire chief at Adams and manager at Talmage, Dunbar and Ceresco. In 1928 he became a combinationman at Wahoo and shortly after moved to Lincoln in this capacity. He became a switchboardman at Lincoln in 1942, equipment foreman in 1947 and assistant chief switchman in 1949 before his appointment as chief switchman on Nov. 16, 1949.

He is survived by his wife, Viola; sons, Donald, Elyrn, Charles, and Kenneth; and daughter, Mrs. Norma Holmes, all of Lincoln; and a sister, Mrs. Leo Frank of Harvard, and 11 grandchildren.

Smith was a member of the Christian Church and a charter member of the Frank H. Woods chapter of the Independent Telephone Pioneer Association.

Truck Operators' Manual

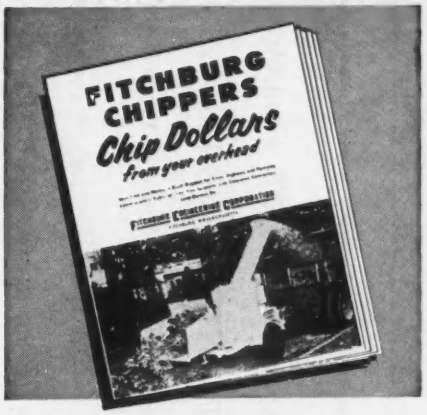
THE AUTOMATIC Transportation Co. has published a new Instructors' Manual to be used as a guide for Industrial Truck Operators' Training Program.

This 20-page booklet is divided into six stages: theory of operation; good driving practices; details of construction in principal types of trucks; practical operation of the truck; demonstration and written examination for the driver trainee.

Photographs of Automatic Industrial Trucks are shown to illustrate the details of construction of each particular model manufactured by Automatic. Cartoons are also included to show how accidents happen and how to prevent them.

Copies of the Instructors' Manual are available upon request from the *Automatic Transportation Co.*, 149 *W. 87th St., Dept. TE&M, Chicago, Ill.*

HOW TO SAVE MONEY IN BRUSH DISPOSAL



Read how foresters, tree surgeons, highway and park commissions, telephone, power and gas companies cut brush disposal costs up to 50% with a Fitchburg Chipper.

See cut-away color drawings of the Fitchburg Chipper—the exclusive Fitchburg spring-activated feed plate—pictures of different models in action.

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TELEPHONE ENGINEER & MANAGEMENT'S

PLANT MAN'S

"SPEC" BOOK

Prepared By
Educational Division
TELEPHONE ENGINEER & MANAGEMENT
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(33) Tree and Brush Control — Trimming Trees and Cutting Brush

When a tree with a single vertical trunk, such as pine or cedar, is to be cut down in sections, all side limbs should be removed to leave 2-foot stubs. If a tree close by can be used for crotching the top rope, the method shown in *Figure* 16 is satisfactory for taking the tree down in sections.

If no trees are close by that can be used for this purpose, it will be necessary to omit the top rope and use only the strong butt rope. The guide rope is then employed to break off the section of trunk. The butt rope snubbed on a lower stub will keep the section from falling the wrong way.

If no stubs are present for attaching the butt rope, a slack block may be attached to a rope sling passed around the tree below the saw cut to be made, and the butt rope run through the block. If the trunk section is heavy, the butt rope should be snubbed around the trunk base before tying so that the section can be lowered safely afterwards.

Removing Undergrowths and Weed Trees — Disposing of Brush

Undergrowths are troublesome when they grow high enough to interfere with the line wires. Such growths occur as coppice growth (sprouts from stumps), saplings, thickets, weed or scrub trees, hedges, and windbreaks. Weeds, particularly sunflowers, will grow into line wires in localities of abnormally heavy rainfall and the wires are low.

Along federal and state highways, it is the practice of highway maintenance crews to remove undesirable undergrowths and it is generally unnecessary for tele-

(34) Tree and Brush Control — Trimming Trees and Cutting Brush

phone workers to do this work. Plant growths along county roads are usually neglected, however, and unwanted growths should be removed in the course of trimming trees along the route of an open-wire lead.

The most satisfactory method of eradicating roadside growths is to employ chemical spraying, using herbicides as covered in *Section* 2-155.05. In some cases, as when sensitive crops are nearby, mechanical methods of removing the brush may have to be employed when the growths must be removed. Bulldozing is an effective method of removing dense hedges and can be quite economical if the county officials, property owner or tenant, and the telephone company agree to a three-way split of cost of this project. This is particularly the case when one of the parties to the agreement has bulldozing equipment which he can use as his share of the expenses of removing the brush.

Weed trees such as the wild cherry are of no value and should be destroyed. If they are allowed to grow to maturity, it may be difficult to obtain permission from property owners to remove them. Wild cherry trees should be taken away or destroyed, as the foliage becomes poisonous on drying up and may be dangerous to livestock.

Vines are occasionally found growing up poles and guys. Since such plants can cause considerable interference to line wires, they should be removed. It may be difficult to permanently eradicate the vines, but if they are taken off the pole and guy and spread on the ground in a direction away from the pole, they

More Data For Your "Spec Book" on Page 59.

More Data For Your "Spec Book" on Page 59.

TELEPHONE ENGINEER & MANAGEMENT'S

PLANT MAN'S 'SPEC' BOOK

(35) Tree and Brush Control — Trimming Trees and Cutting Brush

will continue to grow in that direction instead of growing back up the pole.

Poisonous plants such as poison ivy, poison oak, or poison sumac should be destroyed whenever found growing in the vicinity of an open-wire lead, particularly near poles. To avoid handling poison ivy growing up a pole or guy, a hooked length of iron wire should be used to pull the ivy down. Great care must be exercised in working near poisonous plants, and precautions taken to prevent infection from these plants. Smoke from burning poison ivy or poison sumac should be avoided.

Brush accumulates in the course of tree trimming or removal work, also when undergrowths are removed, and must be disposed of in the proper way. Brush left lying on the ground presents an objectionable appearance. Furthermore, brush from certain species of trees such as the willow or box elder may take root and grow into weed trees. All brush should be disposed of without delay to avoid criticism from property owners and the public.

It may be possible to dispose of the brush on the location in accordance with instructions from the property owner. Such instructions should be obtained at the time the owner is contacted for the trimming work. If the owner is to handle the disposition himself, this point should be agreed to at this time in order to prevent any future misunderstanding.

If the owner wishes the company employes to dispose of the brush and specifies the way in which they should do this, his instructions should be followed. If, however, the method he proposes would result in

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PLANT MAN'S 'SPEC' BOOK

(36) Tree and Brush Control — Trimming Trees and Cutting Brush

fire or injury hazard, property damage, or obstruction of public ways, this fact should be pointed out to the owner so that he can modify his directions.

Brush may be disposed of by burning. In this case, it is taken to a clear space, where fire will not spread to adjacent property, and burned in small piles away from line wires or trees. Usually green brush will not burn well, but if a fire is first built with dry, dead wood and the green branches piled on a little at a time, the foliage and green wood will dry out and burn readily.

After all the brush is consumed in this manner, the embers should be covered with dirt or scattered so that there is no possibility of their reigniting.

Instead of burning the brush, it may be piled in out of way places, if permission for doing so can be obtained. In this case, the brush may be dumped where it will prevent washouts from rains or streams; provided that there is no danger of fire being spread by the brush.

If the brush must be hauled to a distance, as to a public dump, and there is a considerable quantity of brush, the larger branches may be tied behind the truck or laid on the truck bed with the foliage end on the road. With the rest of branches piled on top, the larger branches become a sled for hauling the smaller branches. When a light pole trailer is utilized, a brush rack may be mounted on the trailer for carrying the brush.

A mechanical brush chipper may be employed where large amounts of branches from trimming operations or brush from hedge removal cannot be satis-

TELEPHONE ENGINEER & MANAGEMENT'S

PLANT MAN'S 'SPEC' BOOK

(37) Tree and Brush Control — Trimming Trees and Cutting Brush

factorily disposed of otherwise. The machine has rotating knife blades and a feed chute through which branches are fed. The knives cut up the branches and brush into small chips which are then blown into an enclosed truck. *Figure* 17 illustrates a typical brush chipper.

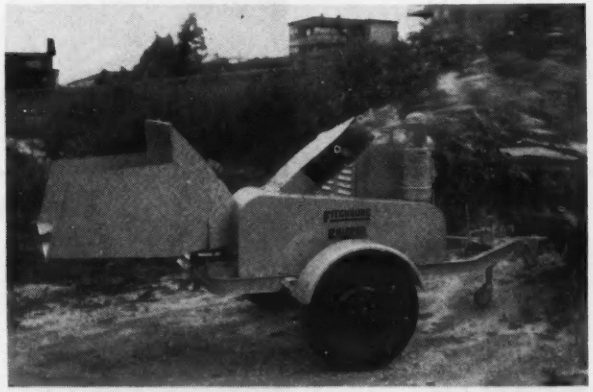

FIG. 17: — Brush chipper for cutting up branches and brush into small chips for easy disposal.

Notes on Tools Used in Tree Trimming

Power tools and machines used in tree trimming and removal are time and money savers when labor costs are high and the minimum number of workers must be employed on extensive projects. Hand tools nevertheless are useful and must be used in many cases. The uses of most of these tools have been described.

More Data For Your "Spec Book" In The Next Issue.

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By pressing the intercom button and dialing one digit, you select any one of up to 9 other phones in the system. A flashing light and/or a buzzer signals the desired party.
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You can convert Types 80, 83, 88, or 90 telephones (or other equivalent phones) to keyset operation with Automatic's Type 86-A Key Adapter. This compact unit is available in 4 and 6-button models and in the same key assemblies as the Type 86 Key Phone.

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PLANT NOTES ON NEW DEVELOPMENTS

by JOHN S. REED

New Roller Type Reel

In this issue Mr. Reed describes: (1) A roller type reel that permits loading and unloading of reels without using jacks; (2) a new device that reduces the cost of ground line preservative treatment of standing poles; and (3) a new tool for lashing cable.

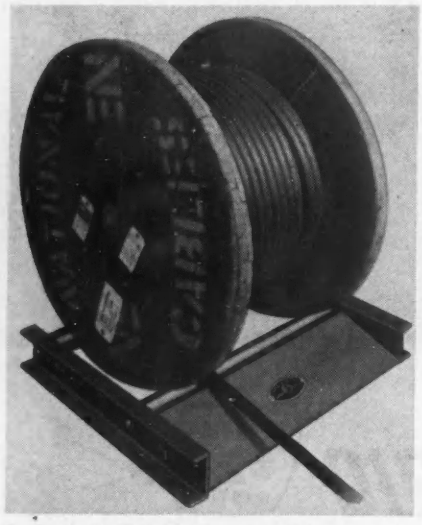
Roller Type Reel Has Versatile Uses

THE HANDLING of cable reels has been modernized and most of the back-breaking work eliminated with a roller type reel which provides an easy, efficient and safe way of handling heavy cable reels or wire. The low slanted back and the sure front roller lock is said to assure easy loading and unloading of reels without using jacks.

Strong ball-bearing rollers with hex ends lock in the end channels while the heavy gauge steel frame adds strength and rigidity. The rollers can be moved to adjust for various reel sizes, so cable can be taken easily from top or bottom, front or back. The platform shaped reel stands upright on all edges and can be carried anywhere.

JOHN S. REED, TE&M's technical editor, is plant methods supervisor, Lincoln (Neb.) Telephone & Telegraph Co.

The reel is available in two sizes, style A for single reels up to 28 inches wide, 2000 lbs. capacity, and Style B for two reels up to 24 inches wide each, or up to one 48 inch wide reel, 4000 lbs. capacity. Style A has one simple positive lock. Style B has two locks, one for each front roller and provides a separate set of rigidly aligned rollers for each side of large reels to compensate for possible variation in diameter and to prevent slipping or friction between rollers and reel. Style A is 30″ wide OD, 28″ deep and 3½″ high and weighs 60 lbs. Style B is 52″ wide OD, 28″ deep and 4″ high and weighs 110 lbs.



Style A Roll-A-Reel as used in unreeling cable.

Style A roller reel can be placed on the bed of a pickup truck and used for unreeling reels of rural distribution wire, thus avoiding use of a construction truck for this light work.

New Device Simplifies Making of Pole Bandages

POLE BANDAGES have come into considerable use in treating standing poles. These bandages are applied over the ground line area of the pole after the wood is shaved in this area.

A new device which simplifies making of pole bandages has been recently developed. It is said to be an inexpensive device that reduces to a minimum the cost of groundline preservative treatment of standing poles. It is a portable machine that rapidly produces pole bandages of any size as they are needed. It is designed for use only with Pol-Nu, a grease type preservative containing 10% Pentachlorophenol.

The bandage maker holds a 300-foot roll of poly-kraft paper and approximately 40 lbs. of the preservative. As the paper is pulled through the machine, a preservative coating of the desired thickness is laid on it. Thickness of the coating is adjustable from ⅛ to ⅜-inches but the company recommends a ¼-inch application for most groundline treatments.

A template provides adjustment of the bandage width to 15, 18 or 22 inches. Bandage length is determined by circumference of the pole. A saw-tooth edge is provided for quick cut-off of the bandage as it emerges.

The prepared bandage is wrapped around the previously excavated pole at the groundline and adheres without stapling. No paddles, pressure guns or other equipment is necessary. The bandage-maker can be carried to locations inaccessible to trucks.

The preservative used is a special

FIG. 1: — As poly-kraft paper is pulled through the Bandage-Maker, Pol-Nu preservative is evenly distributed to form bandage. (Chapman Chemical Company)

FIG 2: — The preservative flow is stopped and bandage is raised to cut to desired length.

FIG. 4: — After the pole hole is back-filled, the Pol-Nu Bandage-Maker may be carried to the next pole.

formulation of Pentachlorophenol. When in contact with wood, the Pentachlorophenol in oil is released and penetrates deeply. The oil solution released into the wood actually carries in excess of 13% Pentachlorophenol. By carrying its preservative action well below the pole's surface, long-lasting protection against decay and insect attack is said to be provided.

The poly-kraft paper backing insures penetration of the preservative into the pole and prevents its being lost in surrounding soil.

This new protection method is said to cost so little all poles excavated for inspection and not replaced can be treated, and, regardless of immediate apparent need, it would be cheaper to treat the pole with this new process than to re-excavate for another inspection later on. Cost is such that one year of additional service life will more than pay for groundline treatment. Since the bandage treatment method is considered to give 10 or 12 years of additional life, substantial savings are possible.

Figures 1 through 4 illustrate the steps in making the pole bandage and applying it to a pole.

FIG. 3: — The bandage is wrapped around the previously cleaned pole to provide preservative protection in the groundline area.

New Tool For Lashing Cable

THE NEW Hubbard lashing tool enables small companies to economically lash their own telephone cable. It can also be used by larger telephone companies for lashing short extensions of cable with substantial savings, according to the manufacturer. As shown in the illustration, the lashing tool is a sliding bracket equipped with a tensioning spring which assures tight spiral wraps of the lashing wire and prevents slack from developing if the towing of the lashing tool is stopped. A precoiled tube of lashing wire is attached to the tool to supply the wraps of lashing wire.

The procedure consists of drawing the precoiled tube of lashing wire in such a way that the wire coils are transferred to the messenger and cable, lashing them tightly together. The lashing wire is .045-inch pre-

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Here too you can see the Point Breeze Works of Western Electric where more than 6000 Baltimoreans help us make telephone apparatus and equipment for the Bell System — including enough wire and cable in a year to girdle the globe 258 times.

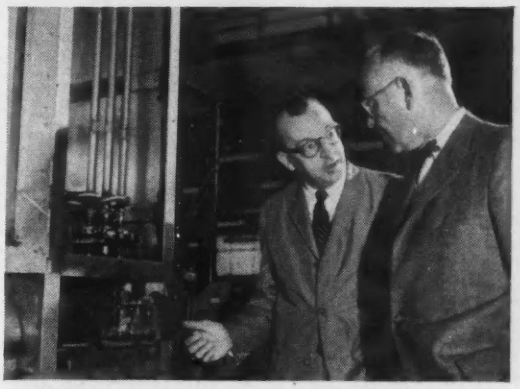
What does this huge Western Electric plant mean to Baltimore? It means jobs and payrolls to spend with local merchants, taxes we pay and business for our over 800 local suppliers. Last year throughout the whole state of Maryland we paid out over 9 million dollars to 915 firms.

Being in Baltimore means something to us, too. We benefit from the skills of a superior work force and enjoy the traditional hospitality of this fine old city.

Besides Baltimore, Western Electric has manufacturing plants in 24 other cities where we also make hundreds of different telephone products for the Bell System. Last year we purchased over a billion dollars worth of raw materials, products and services from more than 30,000 suppliers located in every state of the Union. Of these, 90% are "small businesses." The things we make and buy are distributed to the Bell telephone companies through Western Electric distribution centers in 32 different cities.

Western Electric

MANUFACTURING AND SUPPLY UNIT OF THE BELL SYSTEM



LOCAL SUPPLIER. Kinlock Yellott (right), President of the Haven Chemical Co., and Western Electric buyer, Robert Giblin, observe as copper wire is simultaneously insulated and color-coded with vinyl ink. Mr. Yellott's firm supplies the ink.

VOLUNTEER FIREMAN. W.E.'s David Weiss (left) often meets with Baltimore County Fire Chief Win Winholt to coordinate activities of the paid and volunteer departments. Dave is Executive Committee Chairman in the Volunteer Fireman's Association.

BEAUTY QUEEN of the Point Breeze Works, Jan Amend, receives United Appeal plaque on behalf of fellow employees, all of whom gave a minimum of four hours pay (a total of about $64,000). Making the presentation on behalf of United Appeal is Campaign Chairman Robert W. Thon, Jr., VP of the Savings Bank of Baltimore.

BUSINESS EDITOR Carroll Williams, Baltimore SUN has said of Western Electric: "a solid corporate citizen which makes important contributions to the dynamic economy of Baltimore. They keep a lot of wheels turning." We value his comment highly.

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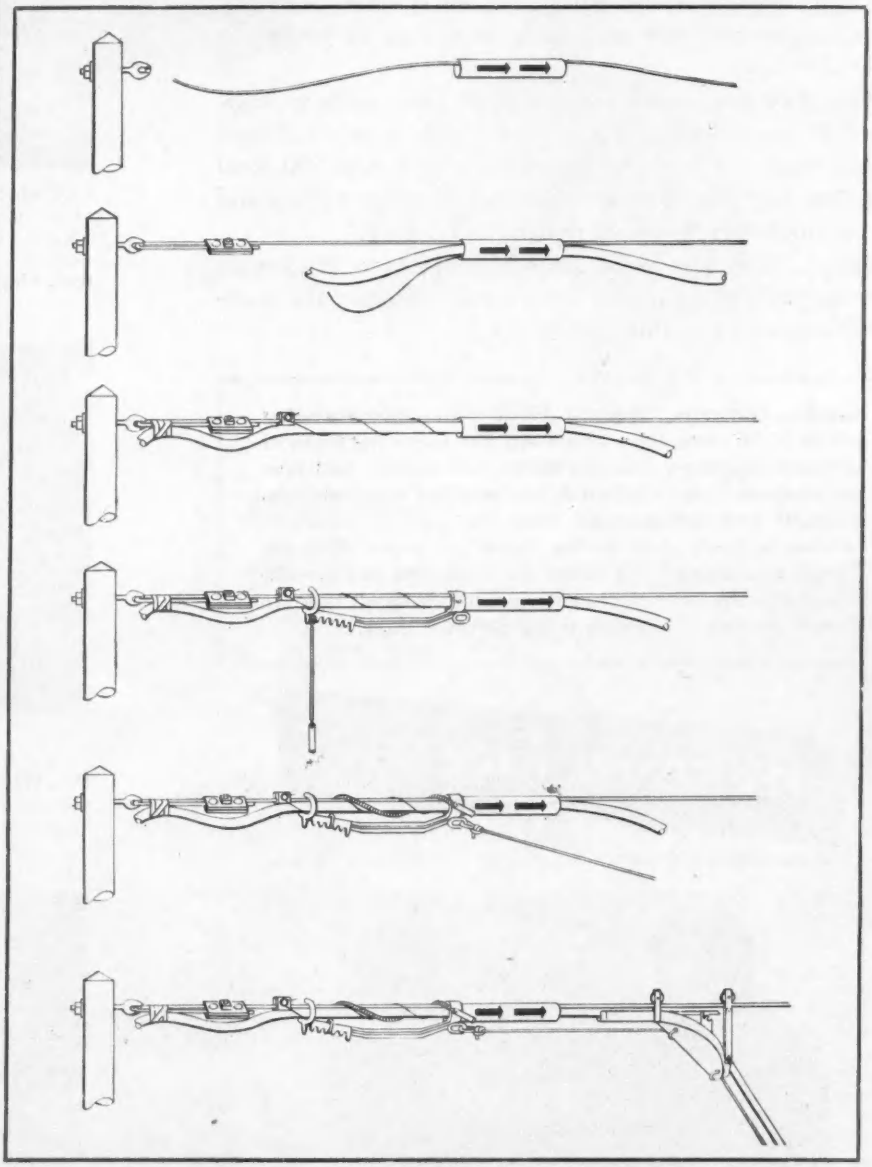
coiled in a cylinder 2-inches in diameter and 13-inches long. Each 2-inch cylinder contains 150 ft. of wire.

The wire must uncoil from the front end of the tube and pass through the coils to the rear as the tube is moved along the messenger in the direction of the arrows printed on the outside. Additional coils or parts of coils may be spliced to the original with an appropriate sleeve and tool, as may be required for longer spans. Each tube containing wire is marked with transverse lines equally spaced throughout its length.

Each line indicates 10 feet of wire so short lengths can be estimated with sufficient accuracy. Sufficient wire, whether from one, or more than one, coil should be provided at the beginning of the operation, as coils cannot be added if the wire is exhausted in midspan.

The lashing tool will accommodate cables up to 1¼-inches in diameter. To facilitate the lasher operation with the larger sizes of cables within its range a cable guide may be used.

When a 300-ft. or longer span is being lashed, a 4-inch coil with adapter is available. This arrangement is a convenience to provide



Steps in using Hubbard lashing tool. (from top to bottom). (a) Placing precoiled tube on messenger. (b) Reattaching messenger and threading cable through tube. (c) Fastening lashing wire to messenger and moving coil ahead to make room for lashing tool. (d) Placing lashing tool. (e) Wrapping tensioning spring on cable and messenger and adjusting for proper tension. (f) Attaching towing rope, if desired, cable guide for lashing operation. Assembly is pulled to other end of span.

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Specify T-C pressure treated poles

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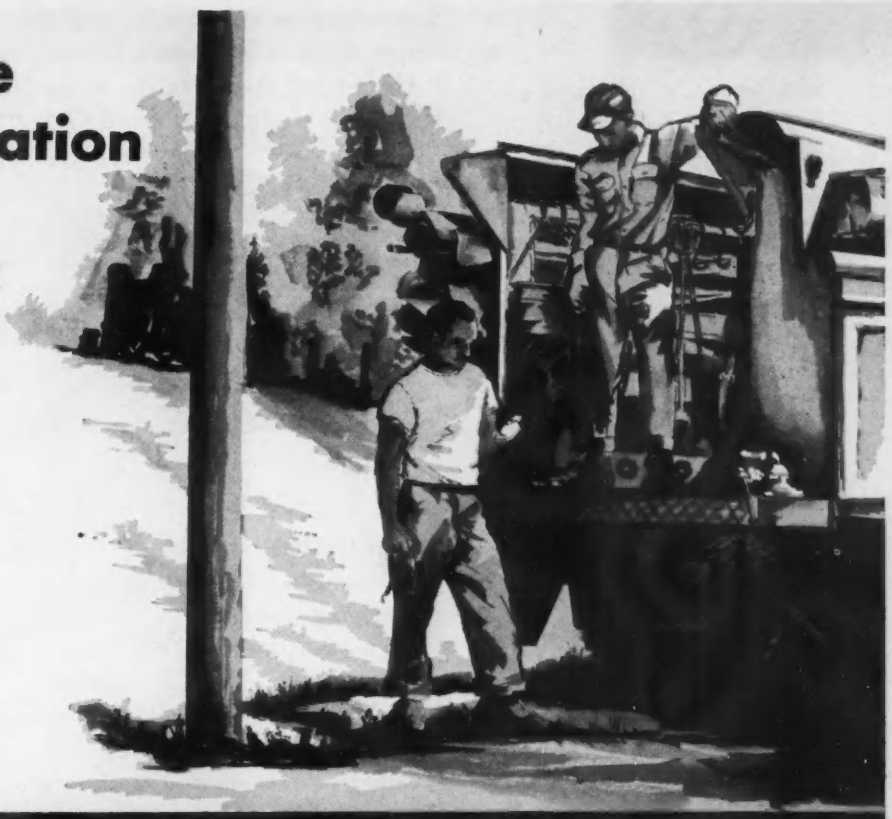

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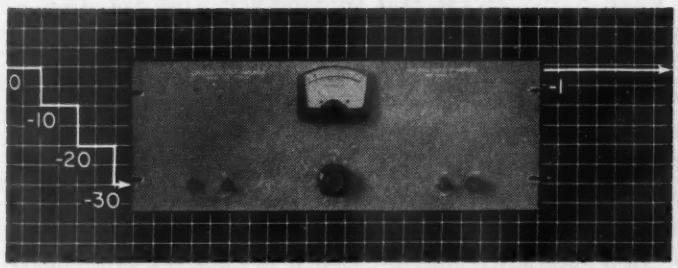

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RESPONSE (±1 db)	20 to 20,000 cps.
OUTPUT CONSTANCY	±1 db (30 db input change)
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HUM AND NOISE	—60 dbm
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OUTPUT IMPEDANCE	600 ohm c.t.
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DIMENSIONS	19" x 7" x 8¾"
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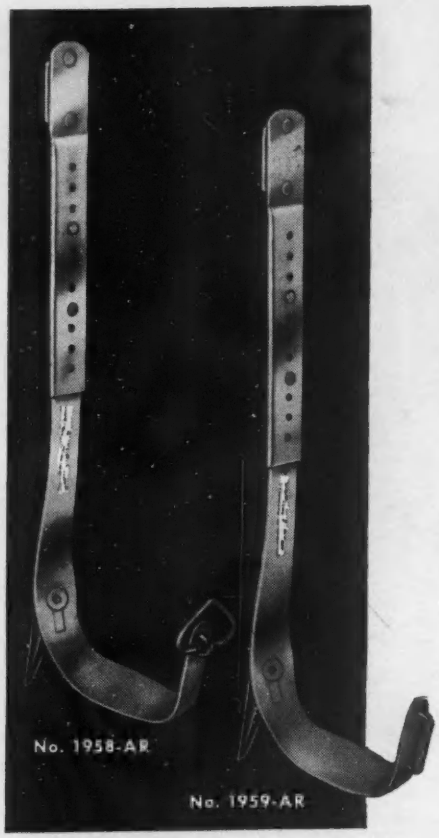

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These new Klein Replaceable Gaff Climbers assure maximum quality and safety. We recommend leg irons be replaced after three sets of gaffs have been used.

The easily replaceable gaff is held in position by a self-locking screw. Full impact is absorbed by the gaff and leg iron. No load is transmitted to the screw.

Adjustable to 14½, 15, 15½, 16, 16½, 17, 17½, 18, 18½ and 19 inches. Made in matched pairs, right and left. Available with triangular ring at ankle or riveted ankle loop. Aluminum finish. Every climber individually tested.

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Foreign Distributor: International Standard Electric Corp., New York.

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twice the amount of lashing wire in approximately the same length tube. The adapter fastens to the lasher in the same position as the smaller coil and is held in place by a thumb screw. The 4-inch coil is then inserted in the adapter and the operation is same as with smaller tube.

QUESTIONS and ANSWERS

QUESTION: — *We are having some trouble with woodpeckers damaging poles in our lines? How can we keep them away?*

ANSWER: — Usually very little can be done about this kind of damage. Power companies with transmission lines running through isolated areas have experienced serious damage to wood poles in their lines by a large sized variety of the woodpecker. Telephone companies, on the other hand, do not seem to have real trouble with woodpeckers attacking their poles. Where there is actually any damage of this kind, it is in the upper part of the poles where as much as one-quarter of the cross-sectional area of the wood could be removed without seriously weakening the pole. The breaking point of a pole is at or near the groundline portion of the pole because of the leverage exerted at this point by wind force. Telephone and utility men who have observed habits of woodpeckers say that it is only by chance a pole is attacked by a woodpecker, after which other woodpeckers will try their hand on that particular pole. It seems these birds are attracted by the holes made in the pole. For this reason, it would be advisable to fill any holes found in poles with cement of a kind that is used in pole tops to keep out water. Sealing the holes will also prevent interior decay which would cause the poles to fail.

QUESTION: — *We would like to know what is the expected life of neoprene jacketed drop wires?*

ANSWER: — According to present experience with neoprene drop wire installations and exhaustive laboratory tests, the expected service life of drop wire with this kind of insulation is twenty to twenty-five years. Our guess is that the actual life will be longer than that in the majority of drop wire installations.

QUESTION:—*In our section of the country where the wind blows steadily most of the time, we have trouble with vibration of parallel drop wire runs in exposed locations. In a few cases the vibration is irritating to the subscribers and it is also hard on the wire and drop wire clamps. What would reduce this vibration effect?*

ANSWER: — The use of vibration dampers will help reduce the vibration. However, there is another way that is considered to be more effective. That is to twist the wire sufficiently to produce one twist every twenty feet of length. Wire twisted in this manner would not oscillate to the extent that a straight span would.

SUBMIT YOUR PROBLEMS

You are invited . . . to tell our authors about problems on which you'd like to have an opinion.

While we don't claim to have all the answers, we'll welcome the opportunity to discuss as many as possible in TE&M's regular departmental columns . . . and that could be helpful to you and others with the same (or equal) problem.

NOMINAL WEIGHTS OF FINISHED WEATHER-RESISTANT WIRE AND CABLE

(Pounds per 1000 Feet)

Conductor Size AWG or Mcm	Copper & Copper Alloy Conductors: URC Type Double Braid	URC Type Triple Braid	Neoprene Type	Polyethylene Type	Aluminum Conductors: Neoprene Type	Polyethylene Type
Stranded						
2	246	270	248	**230**	105	**87.4**
4	155	170	163	**143**	73.3	**53.3**
6	103	115	108	**91.5**	51.5	**35.0**
Solid						
2	239	260	232	**219**	92.2	**79.2**
4	151	164	152	**136**	64.0	**48.0**
6	100	112	101	**87**	45.7	**31.7**

Sources: American Standards Association Specifications

This table shows

POLYETHYLENE covered line wire weighs less

Because it's the lightest, polyethylene-covered line wire is the easiest for linemen to string up . . . hardest for ice and snow loading, gale-force winds to bring down.

Polyethylene-covered line wire, depending on size and conductor, weighs from 5% to 32% less than other types. That's what the figures in the specifications tabulated above show.

This, of course, is no news to linemen who have strung all types of weatherproof line wire. They may not be able to quote pounds and percentages, but they all know you can't beat polyethylene on weight.

Linemen's Favorite Material

Light weight means easy handling, one of the main reasons polyethylene rates tops with installation crews. They also like polyethylene wire because it's clean . . . free-stripping . . . has a smooth, self-lubricating surface that almost makes pulling a pleasure. And despite the exterior slip, the plastic covering hugs the conductor tightly, doesn't ruffle as it goes over crossarms.

"Built-in" Safety Factor

Polyethylene's lightness provides lasting mechanical advantages, since span loads don't tax supports as much as heavier type wire. This "built-in" weight safety factor pays off when violent storms push aerial construction to strain limits . . . when ice and snow loads topple heavier lines.

An added factor in polyethylene wire's ability to stay up under adverse conditions is its smaller diameter. It offers less resistance to wind, a smaller surface for ice build-up.

Winning Combination

Called the "closest to the ideal covering for line wire," polyethylene is outstanding in other respects too. The shield it forms over wire is continuous . . . tough . . . resistant to aging, weathering, moisture, abrasion by lashing branches. It's good for decades of superior service marked by fewer outages, minimum maintenance.

When you order covered wire and cable, make sure the coating is made with PETROTHENE® polyethylene resins. PETROTHENE polyethylene costs no more, but it gives you premium weather and stress-crack resistance.

Polyethylene's advantages are outlined in an informative new U.S.I. data sheet, "Polyethylene . . . The Best Line Wire Covering." Also available is a data sheet showing properties, applications and specifications of PETROTHENE polyethylene compounds. Send for your copies today.

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1200 Attend California Convention: Donald H. Strahl Elected President

By GEORGE A. BRIDGES

Press Relations Coordinator, General Tel. Co. of Calif.

SOUTHERN California extended its heartiest welcome to nearly 1,200 representatives of the California Independent Telephone Association when they gathered for the fortieth annual convention held recently at the Ambassador Hotel in Los Angeles.

The first official session began when Wayne Mullin, president of Mullin Lumber Co. and vice-president of the Los Angeles Chamber of Commerce, welcomed delegates to Los Angeles. This was followed by a talk by J. P. Maguire, association president, who outlined CITA events during the 1958-59 term of office.

Paying special homage to the men and women of the telephone industry, Maguire said "My observations pertain to the people, the men and women employed in our great industry. We have an intangible something in our business that binds us together in a spirit of good fellowship and a spirit of complete cooperation. This is something some industries never have. This is something we must preserve and never lose. Telephone people created and promoted our spirit; telephone people must preserve it. I am sure that this intangible force is a major cause of the fact that 30, 40 or even 50 years and more of service in the telephone business is a rule rather than an exception."

Reporting that at the end of 1958 the California association represented member companies with a plant investment of over one-half billion dollars serving approximately 1,260,000 telephones, Mr. Maguire said that "in spite of a period of recession during the early part of the year, the member companies during 1958 increased their plant investment by 16% and the number of telephones served by 7.5%."

The second speaker, Frank A. Morris, director of telecommunications research for Stromberg-Carlson, cleverly injected wit and life to a highly technical talk entitled: "A Worm's Eye View of Electronic Switching."

Discussing the future of electronic switching and what it can provide telephone companies in the future, Morris said, "The telephone industry must examine itself more carefully as to the service it is currently providing the public and determine before it is too late whether or not they are becoming obsolete, or if they are providing the ultimate in telephone service. Companies can prevent early obsolescence by increasing the convenience and pliability of their service. The transition from electromechanical systems to electronic switching may be an important agent in making this a future possibility. However, it may be many years before the commercial value of the flexibility provided by an electronic switching system is resolved.

"Presently," Morris continued, "I feel there are no techniques which permit the utilization of the electronic type of operation at sensible prices for the small or the average sized in-

California Convention Traffic Panel (l. to r.) consisted of J. A. BRIDGES, The Pacific Tel. & Tel. Co.; Mrs. EUNICE HARRIS, Dos Palos Tel. Co., Inc.; Chairman WM. DALES, Calif. Interstate Tel. Co.; Mrs. BESSIE REECE, Coachella Valley Tel. Co.; and HOWARD P. BARLOW, General Tel. Co.

dependent telephone company. Therefore, even though it might be highly desirable to employ the use of such a system, today it seems improbable that an independent company could adopt it with economic safety."

Projecting his thoughts into the future, Morris said, in conclusion: "I recommend that telephone company management and employes thoroughly peruse all of the material available on the development of the electronic switching equipment so that if these systems become more economical, telephone men and women will be able to cope with the transition and will be in a position to apply this knowledge to their company's future advantage."

The afternoon session featured two panel discussion groups dealing with commercial and plant problems. Heading the commercial panel, Chairman Paul F. Sercu of General Telephone Co. of Calif. was assisted by William F. Krabiel of The Pacific Telephone & Telegraph Co.; Lyal B. Martin, California Interstate Telephone Co.; Verne L. Rogosch, California Water & Telephone Co.; and Mrs. Virginia Williams, Evans Telephone Co. The panel discussed sales policies, sales training, collections and measurements.

Members of the plant panel were: Chairman William G. Sebastian, president, Kerman Telephone Co.; Donald H. Strahl, Gilroy Telephone Co.; F. Page Ellis, Roseville Telephone Co.; David K. Freer, Western California Telephone Co.; Robert Mallon, San Joaquin Telephone Co.; Oscar Ivey, Enterprise Telephone Co.; and John F. Wedgeworth, California Interstate Telephone Co.

The second day's session featured two panel discussions presenting accounting and traffic problems. Members of the accounting panel included Fred C. Mehl, Sunland-Tujunga Telephone Co., chairman; William W. Bentz, Central Western Telephone Co.; Frank J. Cristich, California Water & Telephone Co.; John F. Donovan, California Public Utilities Commission; and Robert A. Lindsay, Western California Telephone Co.

Spearheading the traffic panel, William Dales, California Interstate

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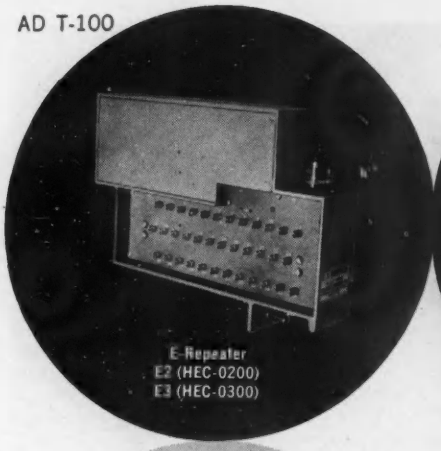

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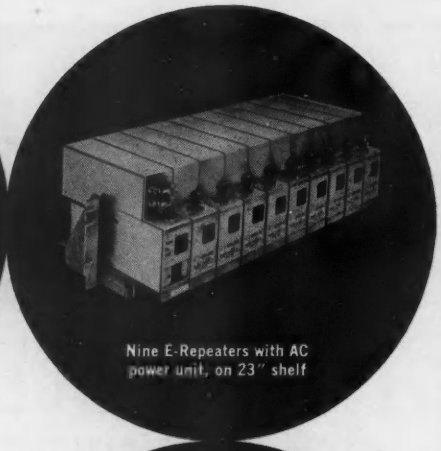
E3 (HEC-0300)



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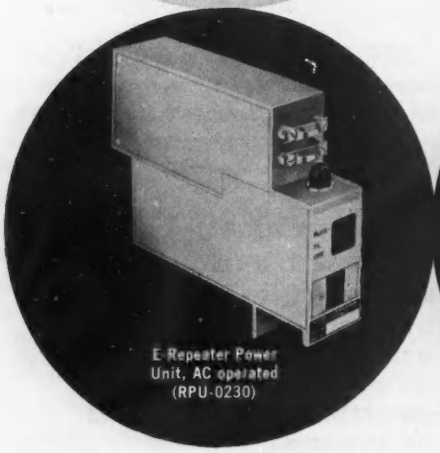

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Telephone Co., presided as chairman and was aided by Howard Barlow, General Telephone Co. of Calif.; J. A. Bridges, The Pacific Telephone & Telegraph Co.; Mrs. Eunice Harris, Dos Palos Telephone Co., Inc.; and Mrs. Bessie Reece, Coachella Valley Telephone Co.

At the afternoon session, Willard Wade, chairman of the nominating committee, announced the new officers and directors for the 1959-60 CITA term. The office of president was assumed by Donald H. Strahl, of Gilroy Telephone Co. Other new officers include Harlan W. Holmwood, General Telephone Co. of Calif., first vice president; W. Gilman Snyder, The Western Telephone Co., second vice president; and Neal C. Hasbrook, secretary and treasurer.

Directors for the 1959-60 term were named as follows: Harlan W. Holmwood, General Telephone Co. of Calif.; J. P. Maguire, Kern Mutual Telephone Co.; Peter A. Nenzel, California Water & Telephone Co.; J. Curtis Newman, Coachella Valley Telephone Co.; W. Gilman Snyder, The Western Telephone Co.; Allan R. Stacey, Sunland-Tujunga Telephone Co.; and Donald H. Strahl, Gilroy Telephone Co.

Following the announcement of the new officers and directors Maguire introduced Clifford C. Pearce, vice president of the United States Independent Telephone Association, Riceville, Iowa, who addressed the assemblage with an interesting talk entitled "The Vanguard of Independent Telephony."

The final convention speaker, R. C. Payne, of the Aerojet-General Corp., closed the formal part of the 1959 convention with an address titled "Educating for the Rocket Age," in which he called attention to the bewildering changes that have taken place since the 19th Century, the kind of person needed to cope with these changes and how the young must be trained and developed.

Among changes he cited were the contrast between the 19th Century individualist and the modern Mass Man or Suburbanite; the rise to power of the communist nations; and technological advances.

"Find the Empty Chair" might be a puzzle caption for this view of part of the crowd in attendance at New York Convention session.

462 Attend New York Convention: A. N. Seward Re-elected President

By **ROY F. SMITH**
Publisher,
"Telephone Engineer & Management"

THE RAINS came to beautiful Scaroon Manor at Schroon Lake, June 15, 16 and 17 but it did not dampen the interest and enthusiasm of the 462 telephone men and women attending the 37th annual convention of the New York State Telephone Association.

Placing its emphasis on the future of communications, the three-day convention program featured addresses by Association President Albert N. Seward, Jamestown; Hamilton A. Cunningham, executive secretary, New York State Telephone Association, Albany; Hugh A. Barnhart, president, United States Independent Telephone Association, Rochester, Ind.; Benjamin H. Oliver, Jr., vice president, Upstate Area New York Telephone Co., Albany; James A. Lundy, chairman, New York Public Service Commission, Douglaston, L.I., N. Y.; Cyril M. Joly, Jr., director of public affairs, National Association of Manufacturers, New York City; and Rev. Colin F. Miller, dean of the college chapel, Hamilton College, Clinton, N. Y.

The "forward look" of the Empire State convention started emphasizing itself at the first general session when Association President Seward told the delegates, "With the continuing consolidation of Independents throughout these United States each year we have a lesser number of Independents to give cooperation to our industry, which means that the remaining group will have to work harder to keep our Independent segment active and alive . . .

"Today," Seward stated, "we live in a world largely dependent on business and industry. The prosperity of business and industry contributes to

Officers and directors of New York State Telephone Association pose with Public Service Commissioners. Seated (l. to r.): Treasurer, W. MALCOLM GRISWOLD, Phelps; Vice President, CLIFTON E. McCORMICK, Johnstown; President, ALBERT N. SEWARD, Jamestown; PSC Chairman, JAMES A. LUNDY, Douglaston, L.I.; Executive Secretary, HAMILTON A. CUNNINGHAM; and Director, FRANK D. FANCHER, Middletown (member of board since inception of NYSTA in 1921). Standing (l. to r.): Directors, C. RAY LLOYD, Manlius; WILLIAM A. KERN, Rochester; SHELDON A. BIRDSALL, Margaretville; and FRED S. FLORANCE, Monroe; PSC Deputy Chairman, SPENCER B. EDDY, Saratoga; Director WILLIAM A. SEELY, Norwich (also a board member since 1921); and Secretary-Assistant Treasurer, GEORGE S. BECKWITH, Keeseville. (Absent when picture was taken were Robert Maytum of Fredonia and Don W. Walker of Newark.)

View of part of the crowd in attendance at the opening session of New York Convention.

the prosperity of the telephone industry. The output of industry and the distribution process of business make possible the high standard of living we enjoy and for the million and one products for our convenience and comfort. We have reached the great development of business and industry through a process of expanding production and improved processes of distribution. We call it progress . . . This desire for better things is characteristic of our people and also of all business enterprise . . . ."

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Emphasizing that the telephone industry has grown great in this country because its members have performed a real service to the people, Seward stated, "There can be no standing still in our business, we must move forward at all times, but this forward march must take in account the needs and desires of our people and customers.

"Service," he said, "is the watchword of our business, and service given in the most economical manner possible has been the motto under which the telephone business has reached its highest development."

The report of Association Executive Secretary Cunningham paid high tribute to the officers, directors and committee members.

"We have all worked together — grown together — and shared the benefits of both together, and so far as I can see, and so far as I am able, we shall continue to work and grow and prosper together," Secretary Cunningham stated.

Reporting that during 1958, 11 Independent telephone companies were granted authority to increase rates, which resulted in an estimated annual increase in revenues totalling $2,180,415.10, Cunningham stated that during the same period, 15 Independent telephone company finance cases were decided by the PSC.

"The companies," he said, "were authorized to issue $2,266,510 in common stocks; $471,400 in preferred stock; $860,000 in mortgage bonds and $979,057 in notes, debentures and certificates. This is new money — big money — still being poured into telephone plant to do the kind of telephone job of which we are all so justifiably proud."

Pointing out that in the rate adjustments and finance cases, the member companies found a wide-open door and a warm, splendid, cooperative spirit existing at 55 Elk Street in Albany, Cunningham said, "Our Public Service Commission takes an understandable pride in the the accomplishments of Independent telephony in New York State. They have helped us do the job and will *continue* to help us."

In 1958, according to Secretary Cunningham's report, Independent telephone companies added about 20,000 stations in service through their territories in upstate New York — an increase of about 3½% over stations in service in 1957.

"Less than 4% of the 572,147 stations in service at the first of this year were still served by magneto switchboards — only about 18% were common battery stations and, of course, these figures are out of date today because of conversions to dial service which have been accomplished since January 1," he said. "78% of all Independent telephone stations in New York State are dial stations — *this* is where that big money goes —in dial conversion programs and in keeping abreast of the technological advances in the magic art of handling the communications requirements of mankind . . ."

USITA President Hugh Barnhart, appearing as the final speaker at the first convention session, told the New York Independents "the most impor-

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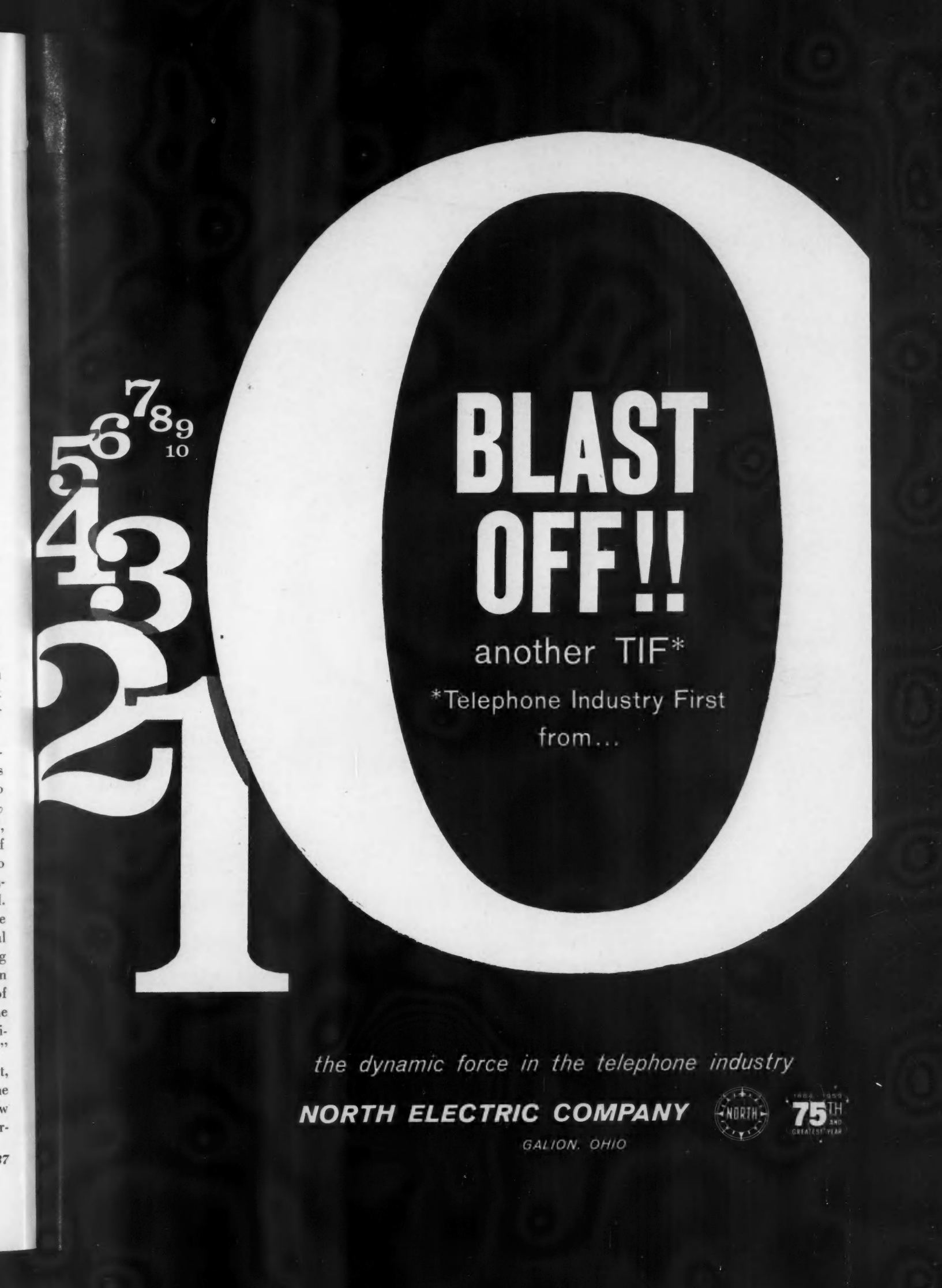
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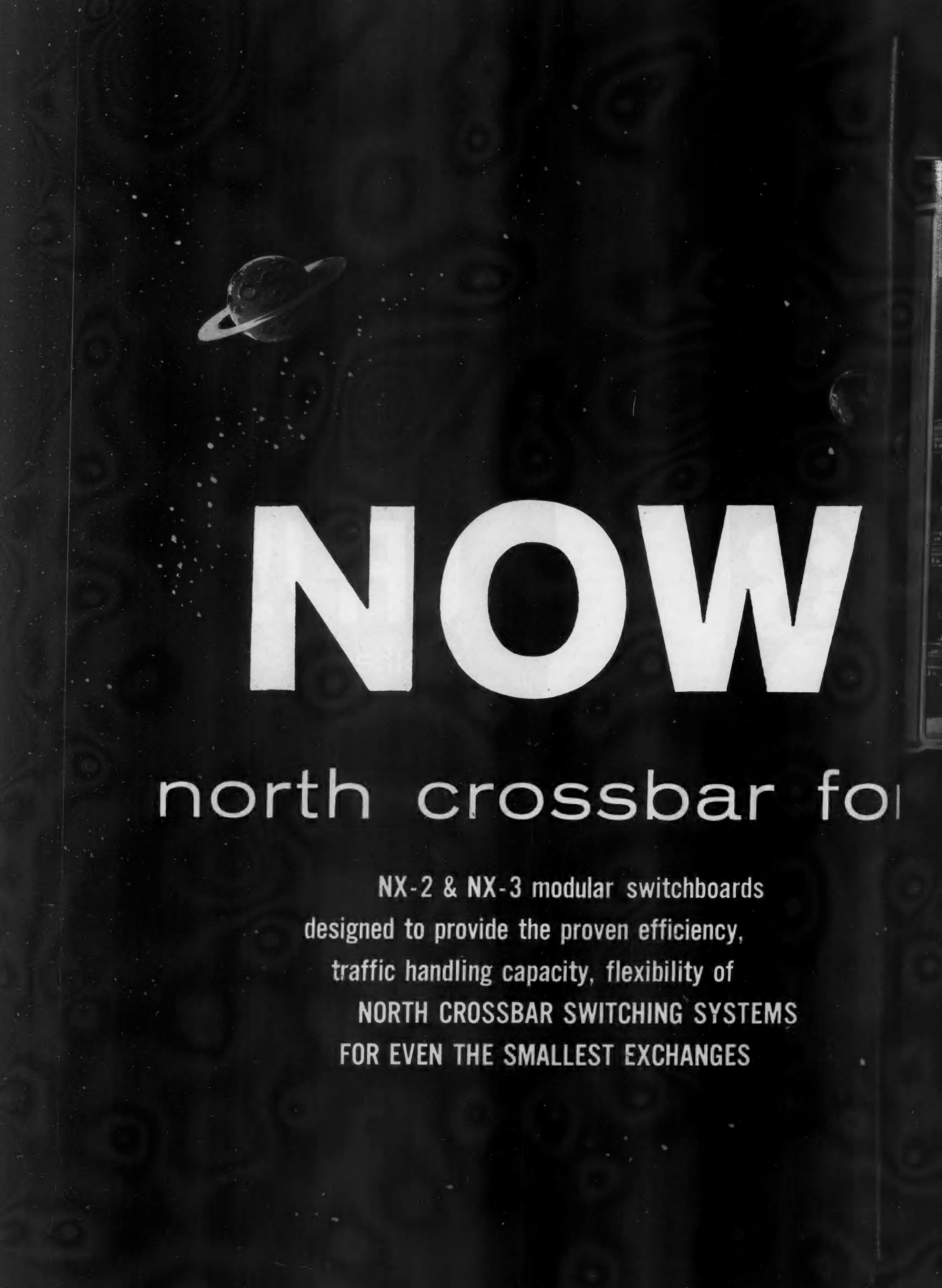
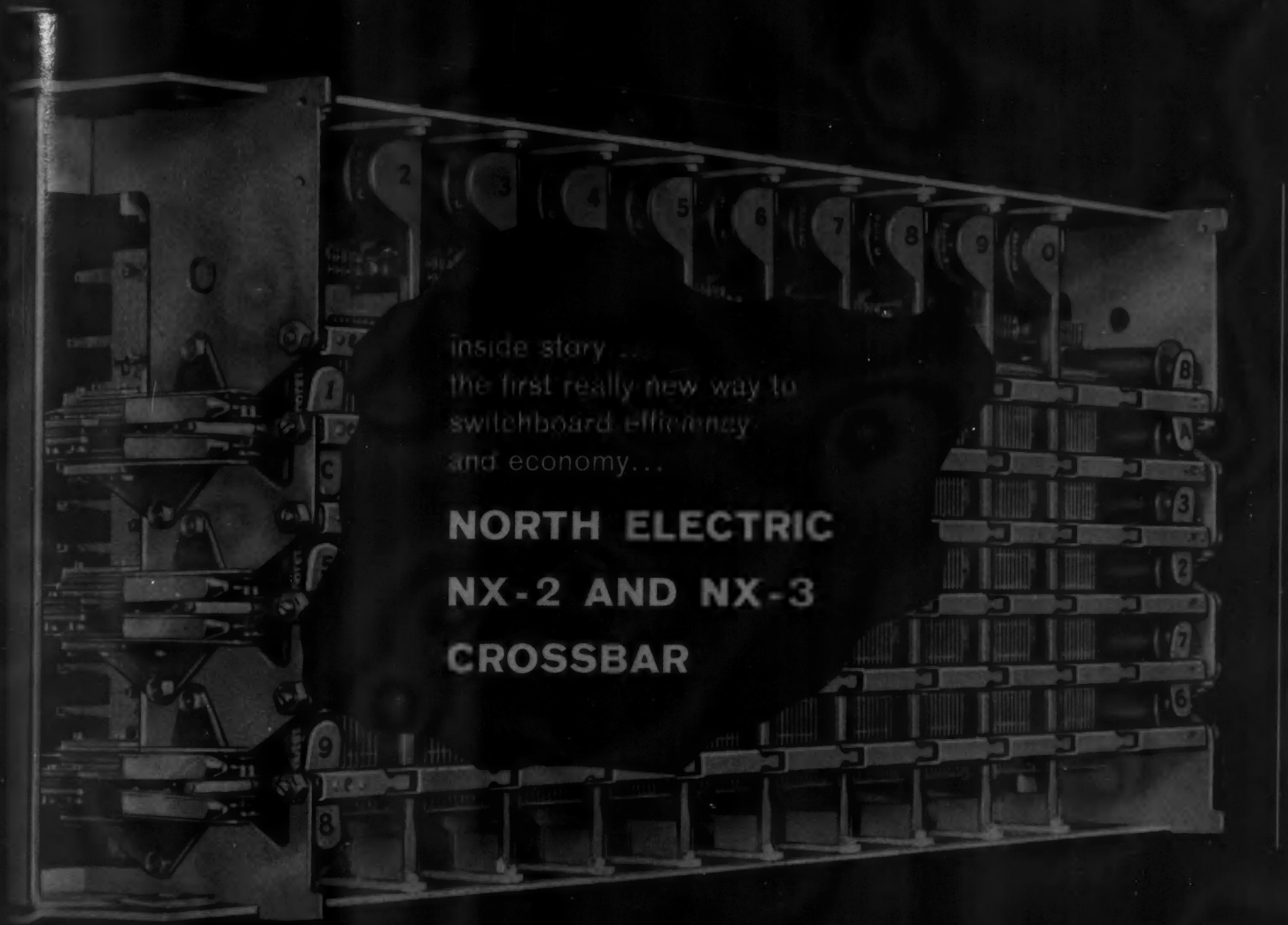
1864 1959
75TH AND GREATEST YEAR


NOW
north crossbar fo
NX-2 & NX-3 modular switchboards
designed to provide the proven efficiency,
traffic handling capacity, flexibility of
NORTH CROSSBAR SWITCHING SYSTEMS
FOR EVEN THE SMALLEST EXCHANGES



inside story ...
the first really new way to
switchboard efficiency
and economy...

NORTH ELECTRIC

NX-2 AND NX-3

CROSSBAR

The needs of Independents across the nation prompted North's design of two new automatic telephone systems with the advantages and flexibilities of "big city" Crossbar —yet fully meeting small office requirements of . . . lowest cost . . . short delivery . . . absolute minimum maintenance . . . compatibility with DDD network concepts . . . standardized components for inexpensive expansion.

New NX-2 or NX-3 Crossbar is *North's* answer!

If you have offices in the range of 30 to 3000 lines . . .

North NX-2 or NX-3 Crossbar is *your* answer!

new standardized modular design

. . . easy to install . . . easy to maintain . . . simple, inexpensive additions in multiples of 30 lines.

North's advanced design concept offers for the first time a "package" off-the-shelf telephone system designed specifically for small and medium size offices.

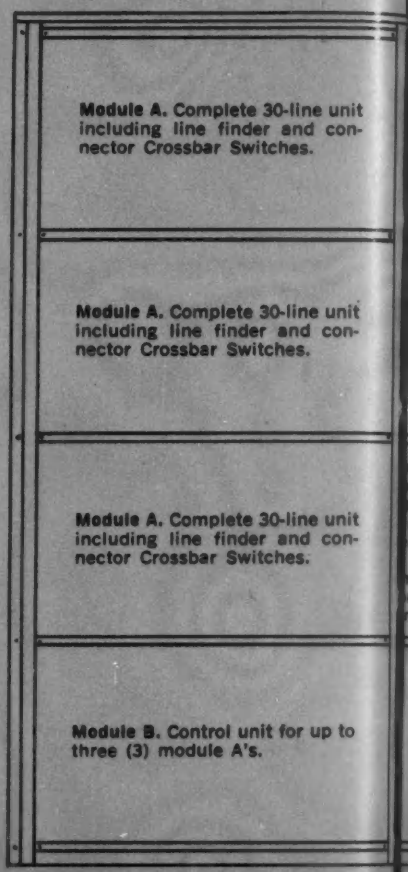
A typical 90 line system is made up of just 7 different standard and one custom trunk modular units—all fully interchangeable with like units. This permits easy exchange of modules to other offices and simple addition of standard modules for inexpensive expansion.

unique modular design provides new compactness and economy

Compact in size, a typical 90 line board occupies a space of approximately 144″ long by 100″ high by 8¾″ deep. 10 to 12 modules fill this space (depending upon requirements). Each module is 24⅝″ high by 46″ wide, installed four to a bay in three bays. (Can be installed five modules to a bay, further reducing floor space.) Modules are factory-wired and tested to the module cross-connect terminal block—saving hours of installation expense. Installation wiring is limited to cross-connect of modules.

The flexible design permits shorter heights by installation of units 3 high and extending to four bays in width, if necessary.

As your exchange grows, the economies in space increase. In many cases, initial common modules will not need to be duplicated to accommodate sizable expansion.


Module A. Complete 30-line unit including line finder and connector Crossbar Switches.
Module A. Complete 30-line unit including line finder and connector Crossbar Switches.
Module A. Complete 30-line unit including line finder and connector Crossbar Switches.
Module B. Control unit for up to three (3) module A's.

ule C. Originating Register
up for local lines with ample
city to handle 90 to 180
s—depending upon traffic

ule D. Incoming Register
p for incoming free service
toll calls. One module will
dle total of up to 20 trunks
verage calling rates.

ule E. Selector unit en-
g expansion to additional
os of 90 lines. For 90 lines
under this unit is not re-
d providing it is not needed
trunk selector. The selec-
module will handle traffic
ne to two 90 line groups
nding upon load.

Future E.

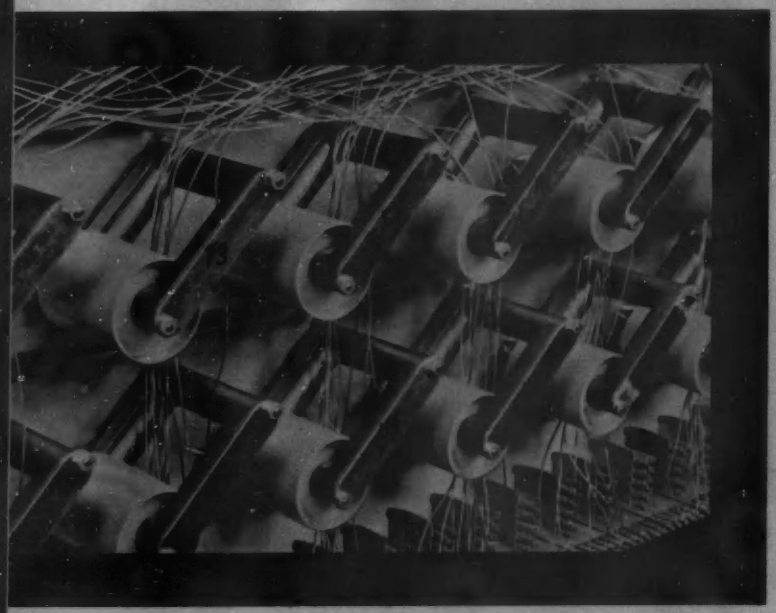
Module F. Number group made up of selecting and link relays for selection of up to 1000 directory terminals. Needed only for Terminal per Station offices.

Translation of the directory number into line termination takes place through F & G.

Module G. New Trans-O-ring Number Group—an industry first—a unique transistorized design incorporating ferrite Trans-O-rings through which jumper wire is threaded for selection of party terminal. One jumper wire to run for full frequency per terminal selection.

Module H. Custom trunk unit for intra-office trunk repeaters.

Future H.

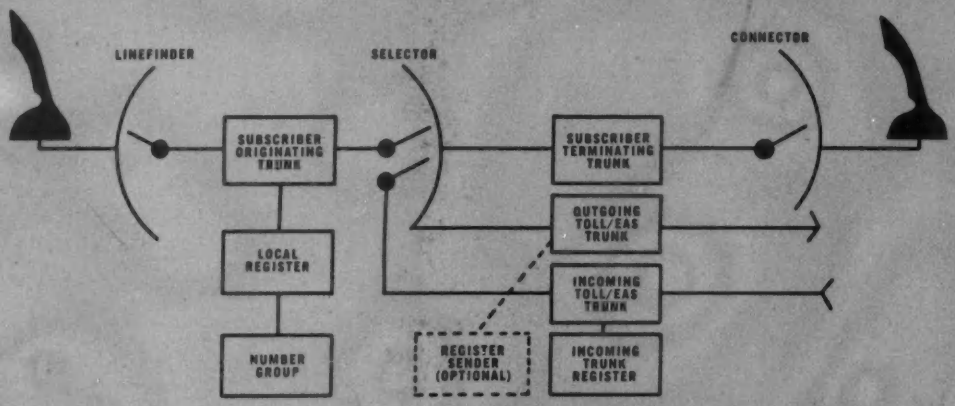


it costs less — to buy the best

Incorporating the tried and proven benefits of crossbar switching, North's new NX-2 or NX-3 Crossbar offers incomparable advantages:

1. *New Modular Design* permits easy and inexpensive expansion in multiples of 30 lines.
2. *New Transistorized Trans-O-ring Number Group* offers advantage of permanent directory number assignment without any restriction whatsoever. Full flexibility in relocating lines with single wire control — (only one wire has to be moved in the transistorized Trans-O-ring number group to relocate a directory number).
3. *Terminal per station* with full ringing frequency available to any terminal.

4. *Only with the Crossbar Number Group* can every subscriber number be assigned to any connector terminal. This allows full flexibility in distributing traffic loads without changing numbers.
5. *100% automatic intercept* for toll and local calls.
6. *Register—Sender with translation optional* for tandem offices wherever alternate coding or routing is required or desired.
7. *100% line Lock-out* standard feature.
8. *No consecutive terminal assignment is needed for PBX* lines. Eliminates number and line reserve problems.
9. *Easily accommodates modern equipment of today* and electronic equipment of tomorrow, including toll ticketing and multi-frequency signaling on toll as well as local lines.
10. *Automatic reverting call identification* requires no special dial code or operator intercept. Switching equipment automatically recognizes this call.
11. *Minimum maintenance*—virtually no moving parts to wear out or maintain. Crossbar eliminates the heavy mechanical wear that is attendant to motor-driven or stepping-type selector switches.



Cutover or expand with NX-2 or NX-3 now for unexcelled small office efficiency. Don't put off your additions or cutover to new equipment another day. With North Crossbar's modular flexibility, you can now add new efficiency to your office at unmatched low cost. And you'll find everything you need in North's engineering and training service . . . providing the most advanced telephone system in the world for unexcelled service.

For technical information consult your nearest North Staff Engineer or write —

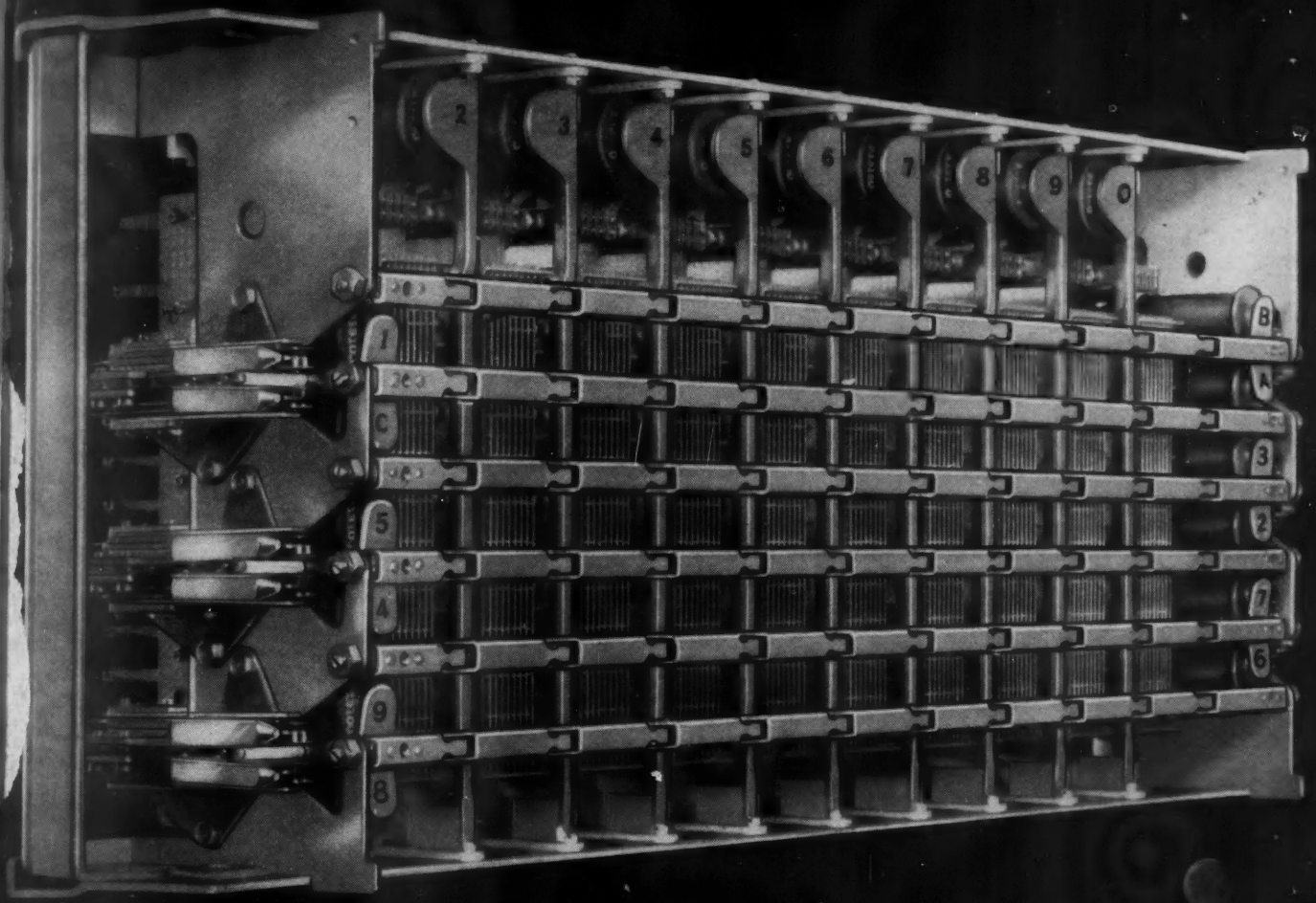
the dynamic force in the telephone industry

NORTH ELECTRIC COMPANY

GALION, OHIO

NORTH

75TH ANN. GREATEST YEAR



small exchanges

Another "Telephone Industry First" from North, the company that has pioneered the most significant advances in telephony for 75 years—NX-2 and NX-3 "Modular Crossbar" for smaller Independent Operating Companies. All the inherent advantages of North Crossbar switching, proven in scores of larger exchanges, have been engineered into two new systems that represent the biggest news to the Independent Telephone Industry since the announcement of the first automatic exchange.

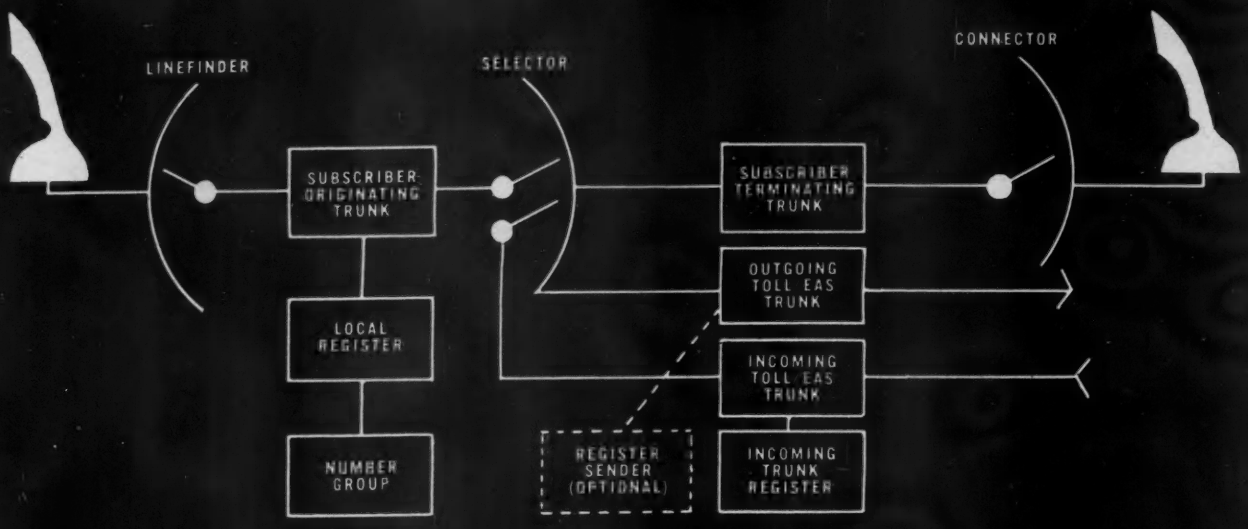
Naturally, such news could come only from . . .

the dynamic force in the telephone industry

NORTH ELECTRIC COMPANY

GALION, OHIO

1884 · 1959 75TH AND GREATEST YEAR



North's modular design of the new small crossbar systems marks a new step forward in providing the smaller Operating Companies with the most advanced switching equipment in the world in the most economical package.

Module A. Complete 30-line unit including line finder and connector Crossbar Switches.	**Module C.** Originating Register Group for local lines with ample capacity to handle 90 to 180 lines—depending upon traffic load.	**Module F.** Number group made up of selecting and link relays for selection of up to 1000 directory terminals. Needed only for Terminal per Station offices. Translation of the directory number into line termination takes place through F & G.
Module A. Complete 30-line unit including line finder and connector Crossbar Switches.	**Module D.** Incoming Register Group for incoming free service and toll calls. One module will handle total of up to 20 trunks at average calling rates.	**Module G.** New Trans-O-ring Number Group—an industry first—a unique transistorized design incorporating ferrite Trans-O-rings through which jumper wire is threaded for selection of party terminal. One jumper wire to run for full frequency per terminal selection.
Module A. Complete 30-line unit including line finder and connector Crossbar Switches.	**Module E.** Selector unit enabling expansion to additional groups of 90 lines. For 90 lines and under this unit is not required providing it is not needed as a trunk selector. The selector module will handle traffic for one to two 90 line groups depending upon load.	**Module H.** Custom trunk unit for intra-office trunk repeaters.
Module B. Control unit for up to three (3) module A's.	**Future E.**	**Future H.**

For information on your North NX-2 and NX-3 Crossbar Switchboards, contact your North Staff Engineer or write—

the dynamic force in the telephone industry

NORTH ELECTRIC COMPANY

GALION, OHIO

NORTH

75TH AND GREATEST YEAR

(Continued from page 74)

tant service of USITA, at least the one which means more to us in dollars and cents, is that of obtaining for our companies our proper share of toll revenue.

"Realization of this," he said, "was what prompted us a few years ago to employ the services of a full-time toll engineer and to set him and his associates up in an adequately equipped department. This step is paying off, and it will be even more compensating to our companies as time goes on."

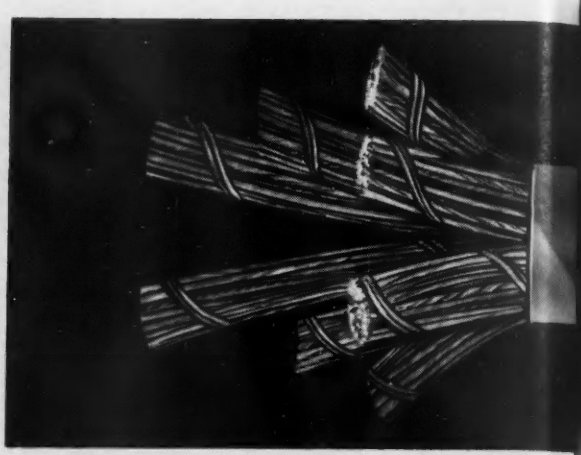
Reporting that in 1935 the amount accruing to Independent companies on message toll settlements with Bell associated companies was only $12 million, President Barnhart stated that in 1953 an $18 million increase was negotiated by USITA.

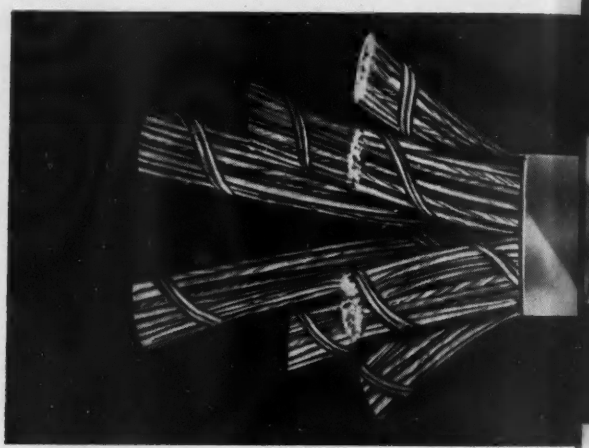
"In 1957," he said, "the settlement total was $186 million, the 1958 totals $204 million. Of course, part of this is due to a gradual increase in long distance business. But I want to emphasize that much of this income gain came as the result of our toll compensations and settlement committee's work. The toll committee has been working for a long time with the Bell relative to our obtaining a larger share of toll income in the near future . . . We are now at the conference table and I can report to you, from personal observation, that the Bell has shown a most sympathetic approach towards a fair and just settlement. So we are very hopeful of concrete results when the final meeting is held. The USITA believes that 1959 will be a year of decision . . ."

Addressing the second convention session Benjamin H. Oliver, Jr., vice president of the Upstate Area of the New York Telephone Co., described plans of his company for a trial using two selected letters instead of conventional central office names. The trial will start with the conversion of the Buffalo, N. Y., area to the 2-5 numbering system.

The plan features a single letter for each dial pull and generally uses the letter which is strongest phonetically for a particular pull and at the same time avoids the use of the letters O

EXTRUDED ALUMINUM SHEATHED TELEPHONE CABLES

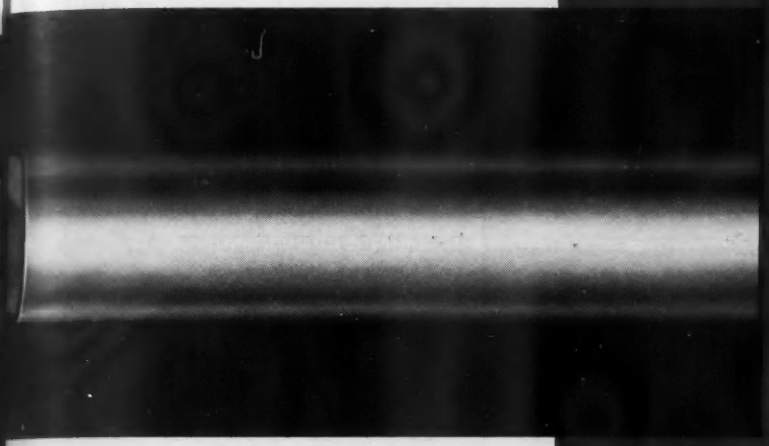




■ light weight ■ great mechanical strength ■ low shiel
and impermeable ■ easy to splice with wiped joints c

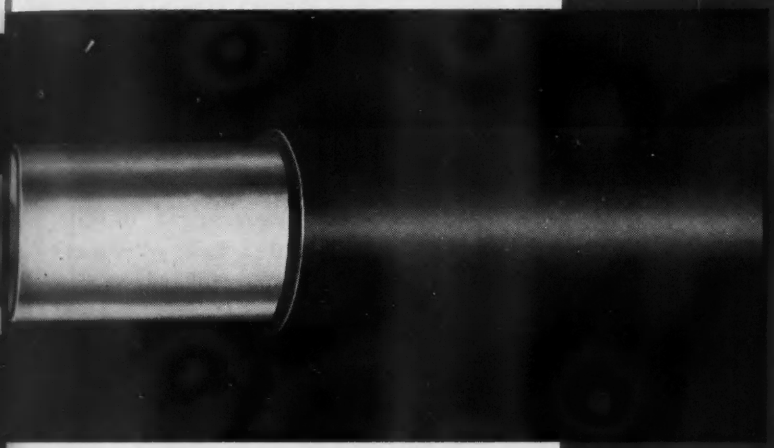
Available in a wide range of core constructions: paired-unit, layer, quads, star quads, composites, combinations, video pairs, low capacitance.

ALUMINUM SHEATHED CABLES AVAILABLE IN THE FOLLOWING SIZES:	
19 Ga.	11 thru 101 pairs
22 Ga.	16 thru 202 pairs
24 Ga.	26 thru 303 pairs
26 Ga.	51 thru 404 pair



TYPE ALS

(Paper Insulated—Aluminum Sheathed) for aerial use.



TYPE ALSP

(Paper Insulated—Aluminum Sheathed—Polyethylene Jacketed) for direct burial, duct or aerial use. Recommended for aerial installations involving marine atmosphere (sea coast locations) or industrial sites having air-borne concentrations of alkalies or chlorides.

resistance ■ seamless
mechanical closures

For complete details, installation and splicing information contact your General Cable Sales Office or our distributors. Write Dept. TE-8 for our new catalog "Extruded Aluminum Sheathed Telephone Cables."

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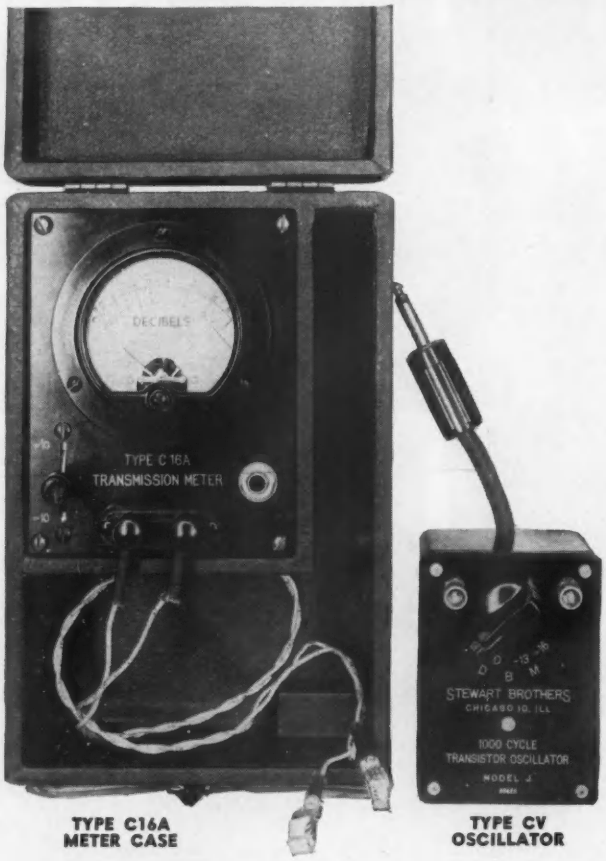
GENERAL CABLE

GENERAL CABLE CORPORATION, 730 Third Avenue, New York 17, N. Y. Offices and Distributing Centers Coast-to-Coast.

NOW! Check your Line Losses Easily . . .

End Customer Complaints of Poor Transmission



TYPE C16A METER CASE

TYPE CV OSCILLATOR

Use This Portable Type C16A

TRANSISTORIZED 1000-CYCLE GENERATOR AND DECIBEL METER

Take your own direct circuit readings from either end of cable —from any cable terminal to determine loading values.

Check and locate trouble in carrier systems and audio circuits.

Case measures 9½" long, 6¼" wide, 3¾" high. Weighs only 4 lbs.

Equipped with test terminals and test leads with clips—also jack for oscillator plug—meter scales read —10 DB 0 DB +10 DB.

Oscillator measures 2¼"x3"x4" and weighs 10.3 ounces.

Will operate 700 hours continuously—much longer, intermittently on self contained 2 cell mercury battery.

Sold through all telephone equipment suppliers—attractively priced—complete set $148.00 FOB Chicago, Ill.

COMMUNICATION EQUIPMENT & ENGINEERING COMPANY
5646 West Race Avenue • Chicago 44, Illinois
Phone EStebrook 8-3109

(Continued from page 87)

and I. Under the plan, for example, ACademy 2 would be replaced by AA 2.

Oliver said studies have shown that the majority of customers who display their numbers in advertising and other media are showing only two letters, and that there is an increasing tendency among customers to use letters, instead of names, in passing calls to operators.

In his convention address Commission Chairman James A. Lundy emphasized that there is an "interdependence between the economy of public utility companies and unregulated business and industry," and a "proper coordination of the interests of both, encouraged by sound government policies, is bound to create a favorable climate for employment and business opportunities."

Discussing Governor Nelson Rockefeller's program for attracting new industry to the state and to encourage the expansion of existing business, Chairman Lundy declared that "Strong and well-managed utilities providing adequate service at reasonable rates are a powerful inducement for the expansion of existing business and for the attraction of new enterprise to the community.

"On the other hand," he said, "adequate and efficient utility services can be provided only by a vigorous and healthy industry, able to expand in accordance with public needs, having the incentive to develop better and cheaper methods of supply service and receiving in return sufficient earnings to assure continued effective operation."

At the final convention session Commissioner Spencer B. Eddy, at the request of Executive Secretary Cunningham, made a statement clarifying the New York Public Service Commission's policy on treatment of accelerated depreciation for rate case purposes.

Commissioner Eddy made the following points:

(1) Accelerated depreciation is a device to reduce income taxes.

(2) It is up to management to decide whether or not a com-

Please turn to page 92

YOUR COMPANY IS INVITED

to Become an Associate Member of the

Independent Telephone Pioneer Association

THE 4,668 members of the Independent telephone industry who proudly wear the industry's true badge of honor — the emblem of the Independent Telephone Pioneer Association (ITPA) — *cordially invite your company to become an associate member of the Pioneer organization.*

This invitation is extended to all *Independent telephone companies* and *manufacturing, supply or service companies* serving the telephone industry.

An Associate Membership in the Independent Telephone Pioneer Association joins your company with the veteran members of the industry — a group whose members have contributed much to the progress of telephone industry and helped produce today's modern communications systems.

Although exclusive and coveted, membership in the Independent Telephone Pioneer Association is not restricted to any special group.

Your company can give its support to the aims and goals of the Pioneer group by joining the ITPA as an Associate Member today.

Your company's application for an Associate Membership in the ITPA will receive the prompt attention of the ITPA Membership Committee.

PLEASE COMPLETE APPLICATION AND MAIL TODAY

Independent Telephone Pioneer Association

P.O. Box 1179 Springfield, Illinois

..... 19 .....

APPLICATION FOR ASSOCIATE MEMBERSHIP

NAME OF COMPANY .....

TYPE OF BUSINESS .....

HEADQUARTERS .....

MAILING ADDRESS .....

ANNUAL DUES $ .....

(Established by Associate Member — $5.00 to $50.00 Annually)

ANNUAL DUES MUST ACCOMPANY APPLICATION

Application subject to approval of Membership Committee

Signature .....

(Print or Type)

TE&M 8-15-59

When YOU Buy More . .
THIS IS THE BRAND
P&H
PENTA
TO LOOK FOR
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NORTHERN WHITE CEDAR
PENTA POLES
PENTA treated top-to-butt for years of added pole-line service resulting in far less per annum costs. Dependable service by a company who has been serving telephone companies for more than 50 years.
PAGE & HILL, inc.
MINNEAPOLIS 3, MINNESOTA

pany is to adopt accelerated depreciation.

(3) It is better for both the company and its customers if the company uses every possible legal device to reduce expenses such as taxes, as that helps to keep the rates down.

(4) There will be no penalty for companies which continue to use straight line depreciation for tax purposes. The New York Commissions' policy differs from that of the Maine Commission in this respect.

(5) Where companies adopt accelerated depreciation, the benefits will be shared as the Commission will allow the company a somewhat higher rate of return than otherwise while authorizing lower rates to the customers.

Officers re-elected at the meeting of the Board of Directors were: President, Albert N. Seward, Jamestown; Vice President, Clifton E. McCormick, Johnstown; Secretary-Assistant Treasurer, George S. Beckwith, Keeseville; Treasurer, W. Malcolm Griswold, Phelps; and Executive Secretary, Hamilton A. Cunningham, Albany.

Directors re-elected were: For two-year terms — Sheldon A. Birdsall, Margaretville; C. Ray Lloyd, Manlius; Robert Maytum, Fredonia; for one-year terms — Frank D. Fancher, Middletown; C. E. McCormick, Johnstown; William A. Seely, Norwich; and Albert N. Seward, Jamestown.

Returning to service on the board after an absence of two years is William A. Kern of Rochester, N. Y. He was elected to a one-year term.

Early attendance prize winners were: Mrs. W. B. Harrison, Alfred; H. S. Griffiths, West Winfield; and Mrs. R. H. Burfeind, Chicago.

Winners of the Exhibitors' Jackpot prizes — each a new 50 dollar bill — were: Mrs. John E. Barry, Warwick; William Kirchhof, Marcellus; and Donald F. Davison, Spencerport.

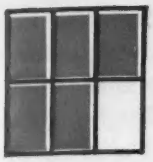
Missouri Pioneers Hold Annual Barbecue

THE ANNUAL barbecue of Theodore Gary Chapter, ITPA, was held at Busch' Lake, south of Jefferson City, Mo., June 20. A record crowd of 137 members, families and friends was in attendance. Members from the states of California, Kansas and Illinois came back for a visit with old friends, and all points of Missouri were represented.

The Barbecue Committee consisted of Foster B. McHenry, M. S. Bodine and George Fitzgerald of Jefferson City.

The 1960 annual barbecue will be held at the same location on June 25. In the meantime, the Chapter is planning regional meetings.

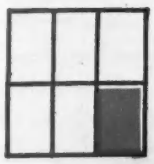
Visitors to New York Convention standing to be greeted were (l. to r.): STEPHEN MARTIN, FRANK ROBERTS and THOMAS MASON, all from Delaware County Christian School, Newton Square, Pa. Mr. Roberts is head of the Science Department at the school; Martin and Mason are star students and Martin has decided to become a telephone engineer.



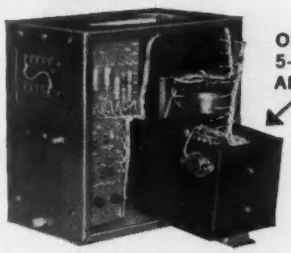
FIVE IDENTICAL PLUG-IN GENERATOR UNITS

Five interchangeable frequency generators—each complete with voltage regulator, oscillator, transformers, amplifiers, cut-off circuit. Each individually adjustable for both frequency and voltage. Frequencies stabilized against changes in input voltage, temperature, load.

Transistor circuits for long trouble-free life. No moving parts. No routine maintenance. Operates from 50-volt battery at extremely low drain.



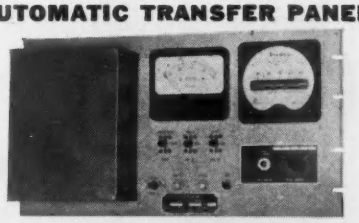
COMMON EQUIPMENT UNIT



OPTIONAL 5-WATT TONE AMPLIFIER

Contains, for all frequencies: ample battery filter, remote control relay, audible ringing tone generator with (optional) 5-watt tone amplifier.

AUTOMATIC TRANSFER PANEL

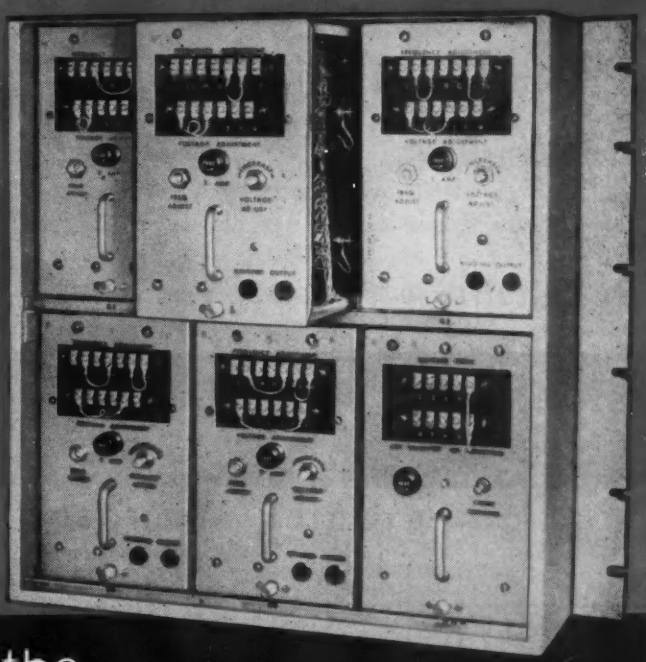


Connects two ringing machines together with either as the main machine, the other as standby. Load is automatically transferred to the standby and alarm is operated on partial or complete failure of the main. Manual transfer possible to check the standby. Either machine supplies load while other is metered for adjustment or tested with simulated ringing failure. Other panels available: portable, manual transfer and supervisory.

TWO MODELS
(Conservative ratings)
Model T: output 25 watts per frequency.
Fits 19″ rack, adapts to 23″ and 30″.
Takes only 17½″ vertical rack space.
Model T50: output 50 watts per frequency.

Write for Bulletin 177A

NEW!



front cover removed

the ideal ringing machine...

THE TRANSISTOR-TYPE

SUB-CYCLE®

★ **ADJUSTS TO ANY FIVE FREQUENCIES**
from 15 to 66-2/3 cycles. Screwdriver adjusts any generator unit to new setting in as little as two minutes.

★ **SELF-PROTECTING**
when ringing into a short circuit.

★ **SINE-WAVE OUTPUT**
...the ideal ringing power.

★ **AUDIBLE RINGING TONE**
Separate generator for 420/40 cycles.

THE ONLY COMPLETE LINE OF POWER EQUIPMENT FOR COMMUNICATIONS

our equipment is sold through leading telephone distributors

FLOTROL® SUB-CYCLE®

LORAIN Products Corporation

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New Model 2174A Selective Voltmeter From Railway Communications, Inc.

NEW PRODUCTS' SHOWCASE

BY DICK REYNOLDS

New Selective Voltmeter

THE MODEL 2174A Selective Voltmeter, from Railway Communications, Inc., is a highly selective measuring instrument employing the heterodyne principle with balanced modulation. It offers a fast and accurate means of making amplitude measurements throughout the frequency spectrum of 300 cycles to 400 kilocycles. This instrument uses highly selective crystal filters to achieve the resolution necessary for amplitude measurements of microwave subcarrier, wire line communications and subscriber telemetering systems.

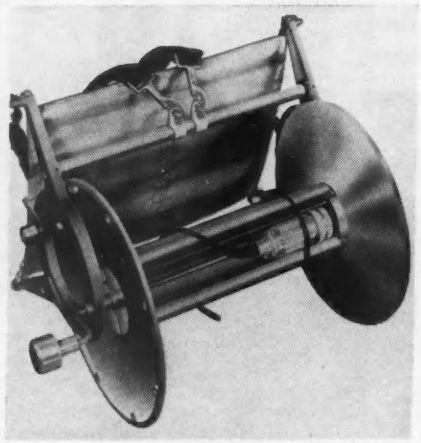
The unit is available with a 50 cycle or 100 cycle crystal filter for amplitude measurements. A 3 kilocycle crystal filter and demodulator are provided for monitoring single sideband speech or tone signals. Amplitude and FM monitoring are also provided with this instrument. An internal oscillator and associated circuit is provided for a fast and accurate means of making amplitude calibration.

The instrument is supplied in a portable carrying case with a cover compartment for storing test leads or associated tools. Total weight is 28 pounds. It operates on normal line voltage of 115V AC 50/60 cycles and requires 48 watts of power. *NP* 256A.

Portable Cable Reel

A PORTABLE cable reel, operated by one man, is now being manufactured by Tesco, Inc.

Reel is light-weight and designed to be worn on the chest, leaving operator's hands free. It is constructed of aluminum alloys and supported by neoprene-coated nylon webbing for even and comfortable weight distribution. The harness design makes it easy to attach or remove the reel assembly. Ball-bearing action assures smooth operation and a cylindrical core prevents kinking. The reel also is equipped with a lock.

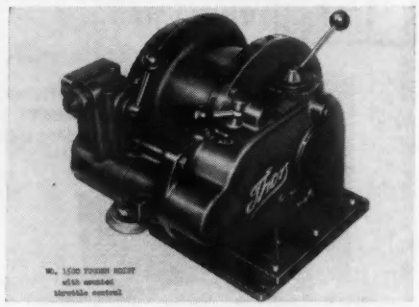


Reel is available in 10″, 12″, 14″ and 15″ widths. Respective capacities, using 3/16″ wire, are 1350, 1625, 1900 and 2035 feet. Weights range from seven lbs., eleven oz. to eight lbs., four oz. *Check NP* 257.

Tugger Hoist

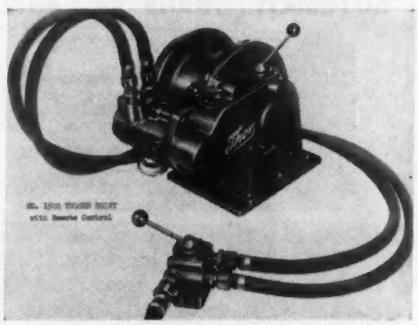
A NEW 1,500-lb. capacity air-operated tugger hoist with dual control system has been developed by the Thor Power Tool Company for mining and construction applications.

The new tugger hoist is designed to lift, lower, and hold loads by air power or permit free-wheeling lowering of unloaded rope. It is built for operation at floor level and has wire-rope capacity of 280 feet.



Hoist with mounted throttle control.

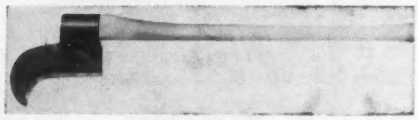
Throttle control of the tugger hoist is furnished standard mounted on the hoist, but can be removed and operated from a remote position by means of connecting hoses. *Check NP* 258.



Hoist with remote control.

Bush Hook

THE BUSH HOOK, manufactured by Mann Edge Tool Co., is a tool for brushing out areas of heavy undergrowth. This tool is used by foresters, fire fighters, utility construction and maintenance crews, and for



brushing out operations in highway construction.

Weld imperfections are eliminated through the company's new one-piece forging method. The head weight is 3¾ lbs., same as ordinary welded construction heads. The eye is forged of the same metal as the hook. The handle is 36″ straight hickory, and flame hardened. *Check NP* 259.

Portable Battery Chargers

A NEW line of portable battery chargers, designed for wheeling to battery locations or for mounting on a wall, has been introduced by Exide Industrial Div. of The Electric Storage Battery Co.

The units can charge the entire

battery, any one cell or any group of cells within the battery up to the rated capacity of the charger. For use on batteries with up to 32 lead-acid cells or 50 alkaline cells, the chargers, designated Variable Voltage Rectifiers (VVR), are equipped with silicon rectifying diodes.

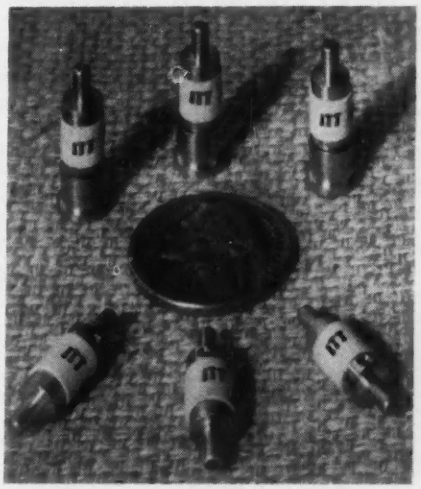
Chargers of this type are available in cabinets with wheels or for wall mounting. The VVR's are to be used as the principal charging source for railway or marine batteries or as emergency chargers for electric utility and telephone batteries.

The VVR's are available in four basic models, all either portable or wall-mounting. *Check NP* 260.

Parametric Diode

A PARAMETRIC diode with many applications where high cut-off frequency is required has been announced by ITT Components Division.

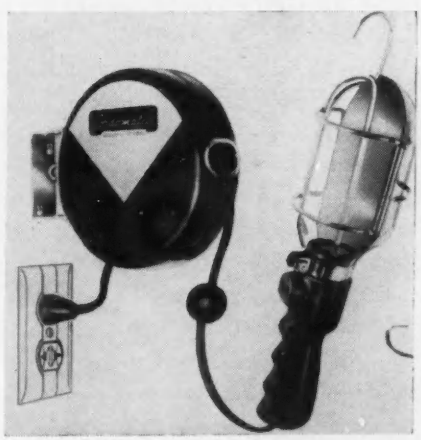
The diode has been successfully tested in low-noise amplifiers used



for extending the range of missile tracking and in over-the-horizon communication equipment. The diode can be employed in such electronic devices as harmonic generators, frequency converters and voltage tuned circuits. Developmental types include diodes with cut-off frequencies ranging up to 150 kilomegacycles, with zero bias capacitance as low as 0.4 micro-microfarad. *Check NP* 261.

Cord & Shop Light

A NEW automatic retractible extension cord and shop light, which eliminates hazards of tangled cable and hand winding, has been an-



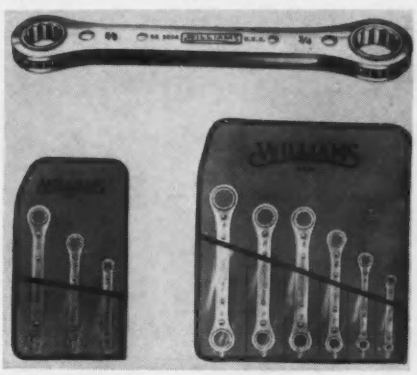
nounced by the makers of Cordomatic products. The automatic reel contains twenty feet of 7-amp safety-rated cable, which retracts after use with a simple flick, out of sight on the enclosed reel.

The cord pulls out to any desired length, locks, then automatically retracts out of the way when not in use. The "business end" of the cord mounts a 100-watt capacity shop light fixture, complete with a pistol-grip impact-resistant handle.

Wherever portable light or power is needed the reel is hung up and the cord plugged into a standard outlet. No special wiring or junction box is required. Unit may be wall-mounted or suspended from ceiling, for total accessibility wherever needed. Built into the handle is an AC convenience outlet for tools and appliances. *Check NP* 262.

Ratcheting Box Wrenches

SIX SIZES of Ratcheting Box Superrenches® with 6 and 12-point openings from ¼ to ⅞ inches have



recently been introduced by J. H. Williams & Co.

Openings are broached to assure proper fit on nuts and bolts. All critical parts, are made of selected alloy steel, and heat-treated for long lasting service and safety. Wrenches are chrome-plated over nickel. *NP* 263.

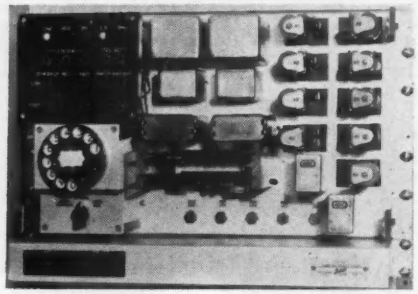
Control Terminal

A MINIATURIZED and fully transistorized control terminal has been designed by Lenkurt Electric Co. for control and supervision of manual mobile telephone systems.

The L2 control terminal, which provides the transition between the telephone plant and the radio transmission medium, is incorporated in the Mobiltel manual systems recently placed in production by Lenkurt.

Two-tone selective signaling, compatible with existing nation-wide mo-

bile telephone service, is used for calling mobile and fixed mobile stations. The L2 provides complete local or remote control of the base station transmitter and full volume reradia-

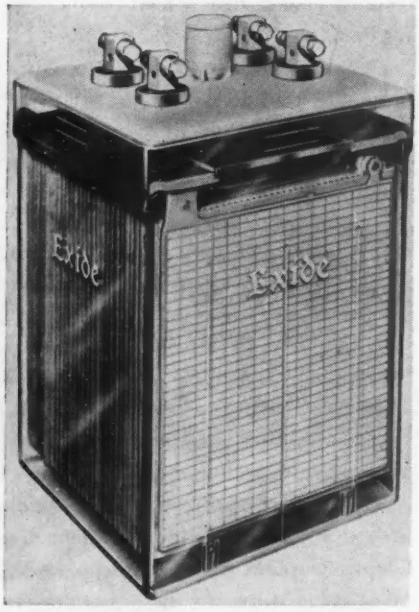


tion of received signals for mobile-to-mobile operation. It uses printed wiring for electronic switches and oscillators. An optional AGAMP (automatic gain adjusting amplifier) automatically compensates for differences in levels received at the terminal from distant and local land telephones. *Check NP* 264.

Flat-Plate Batteries

A NEW series of flat-plate batteries has been added to the Exide plastic-jar line of stationary batteries, extending the range of 8-hour capacities available upward by 1020 ampere-hours.

Designated Type FWA, the new series consists of four sizes with 8-hour capacities ranging from 840 to 1680 a-h. They supplement Exide's



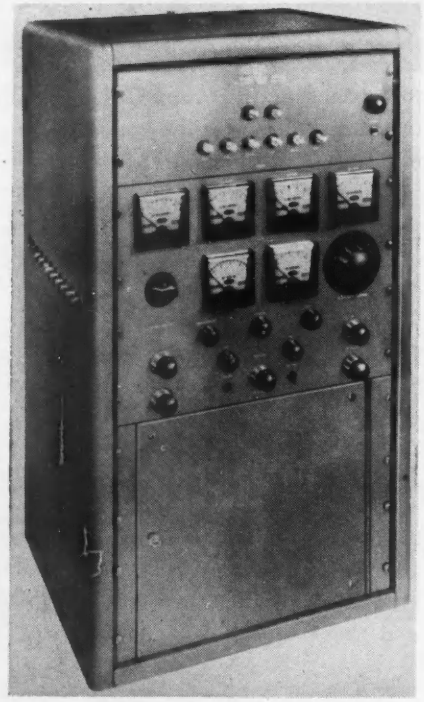
PWA and EWA series which have capacities ranging from 50 to 660 a-h.

These types, all designed for float-charge service, feature: patented corrosion-resistant Silvium alloy in lead-antimony grids, for long life, special explosion-control devices, for safe operation, shock-absorbent plastic jars and super-impact plastic covers.

Assembled as single-cell units, the FWA models have 15, 19, 23 and 29 plates. Capacity ratings (8-hour) respectively are 840, 1080, 1320 and 1680 a-h. *Check NP* 265.

Microwave Modulator

FIRST PRODUCT of the new High Power Electronics Division (hped) of Narda Microwave Corp. is a high-power microwave modulator (Model 10001) for magnetrons covering the range from 3200 mc/sec to 35,000 mc/sec with peak outputs from 6 KW to 120 KW. The modulator is a



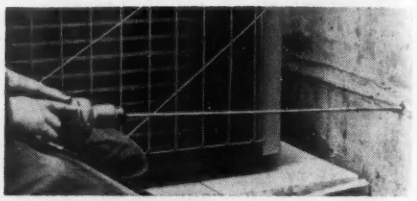
source of high peak power microwave energy when used in conjunction with any compatible magnetron.

The modulator is completely self-contained and designed to fulfill a maximum combination of applications. All high-voltage leads are internal to the unit and completely shielded against accidental contact. The RF output is grounded waveguide, eliminating external high-voltage connections for simplification of laboratory set-up and protection of personnel. The required minimum distance from the magnetron magnetic field is maintained internally and magnetic materials in the vicinity of the unit are not a source of disturbance.

The Narda Model 10001 is 38 inches high, 22 inches wide and 18 inches deep. *Check NP* 266.

24 Inch Carbide Bit

TIME SAVER Tools, Inc. has announced a new 24″ all purpose carbide bit that will cut holes as large as 5/8″ through concrete and ma-



sonry at the rate of one and a half inches per minute.

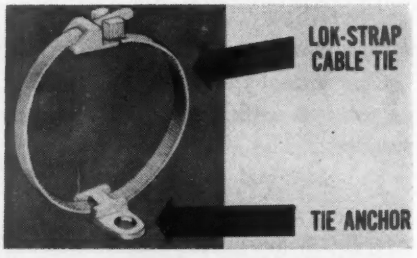
These new bits are made of 2A68 carbide, the same carbide used for deep rock drilling bits in the oil fields. They are rated at 92 on the Rockwell "C" scale, only a few points short of diamond. The tip is silver brazed onto the 24″ steel shank, so that it will stand up under the high heat generated by use in high speed 1/4″ electric drills.

The 24″ shank allows holes to be drilled through thick walls, or in floors from a standing position. *Check NP* 267.

Nylon Cable Ties

"LOK-STRAP" cable ties are now available from Panduit Corp. They can be opened, closed and re-adjusted repeatedly without damage, without special tools. Wire may be traced, added or removed from the harness quickly and easily at any time.

The new design incorporates a miniature quick-release lock which holds the band of the tie tightly and



firmly around wires, but which opens instantly with a few ounces fingertip pressure. Used separately, the ties form tight, uniform bundles which

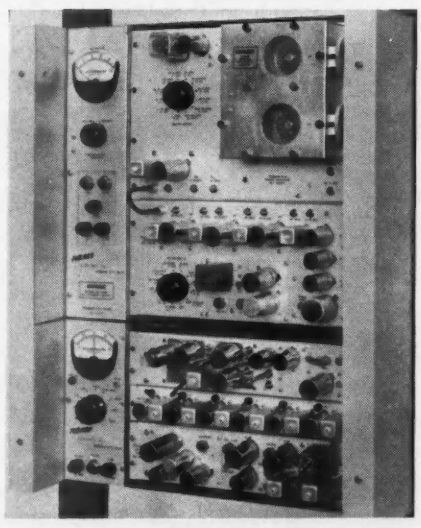
protect wires and make maximum use of available space.

Used with Panduit tie anchors, the "Lok-Strap" assembly becomes a cable clamp which supports bundles and anchors them solidly in any desired position. The tie anchor, a small plastic tab, has a mounting hole at one end and a retaining slot at the opposite end. The band of the tie is inserted through this slot, then snapped around wires.

For most applications, only one size of "Lok-Strap" Cable Tie will replace a complete range of conventional cable ties for wire harnesses from 1/8" to 1¾" in diameter. For larger work, an extra long type is available for bundle diameters up to 3½". *Check NP* 268.

New Radio Equipment

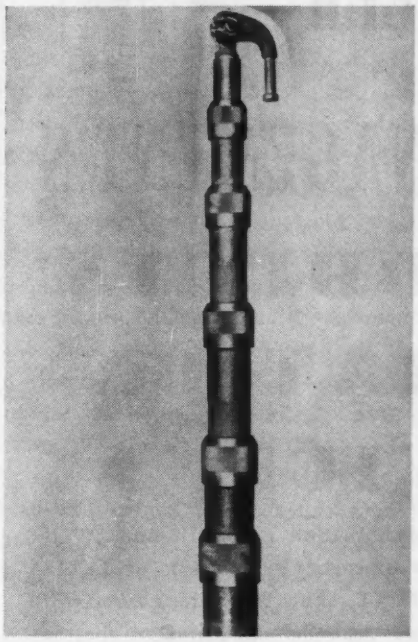
NEW radio equipment from Farinon Electric Co. consists of basic transmitter and receiver frames with numerous optional plug-in panels which are combined as needed to fit individual installation requirements. Equipment can be arranged for a



single-section system of 2 or 3 telephone channels operating at 150 mcs, or for a multi-hop system with 24 telephone channels operating in the 2000 mcs point-to-point bands. Basic options of the equipment provide wide flexibility in the selection of (1) operating frequency, (2) power output, (3) receiver sensitivity, (4) channel capacity, (5) frequency stability, (6) baseband output level and (7) baseband and service channel impedances. *Check NP* 269.

Locking "Hot Stick"

A NEW, locking mechanism for Extendo telescoping "Hot Sticks" has been announced by Orchard Industries, Inc. The fiberglass hot stick, incorporating the new snap action type locking mechanism, has been named the Extendo Locking "Hot



Stick." It is available in lengths of 16, 20, 24 and 28 feet when extended, and each section locks individually in 4-foot increments. The locking arrangement takes only a twist of the wrist to lock each section securely.

The locking collars prevent dust, dirt, grit or grime from entering the joints, reducing maintenance and extending the life of the pole. *NP* 270.

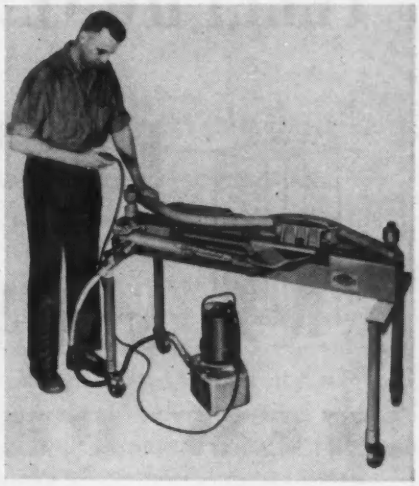
Hydraulic Bender

A MULTIPURPOSE hydraulic pipe and conduit bender of completely new design has been developed by Greenlee Tool Company to make offsets and full 90° bends close to the end of ½" to 2" pipe or conduit with but one setting and one ram stroke. In addition, 180° bends, or bends of any degree between 90° and 180° are easily made.

This new bender is easily set up and operated by one man. Any worker with simple instructions and using the furnished bending charts can make perfectly aligned, clean offsets and bends up to 180°.

The unit develops 15 tons of ram pressure and can be hand or power operated. It is easily wheeled from job to job.

Delivered with heavy duty casters

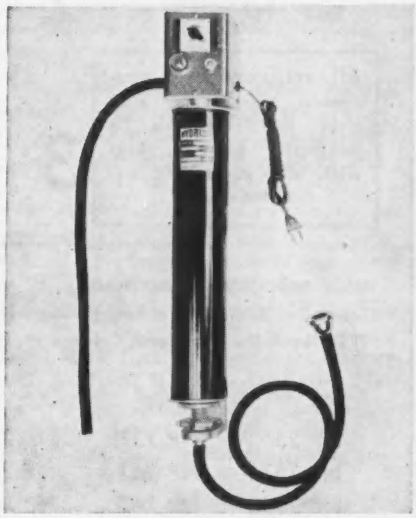


mounted on the base, this bender can be operated at floor level. If it is desirable to operate the bender at a higher position, it may be set up as a table of any height simply by inserting lengths of standard pipe in the base as legs and screwing the casters on the legs. *Check NP* 271.

Battery-Water Unit

THE HYDRION Battery-Water Unit, from A. E. Tomkin & Co., makes it practical to convert ordinary tap water to pure battery water.

By attachment to any water faucet, battery water of the chemical



purity of distilled water is instantly available by simply turning on the faucet. No heat or power is needed. The unit is compact, having no valves or functional moving parts.

An electronic purity selector permits selection of water purities from

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ADDRESS .....
COMPANY .....
CITY ..... ZONE..... STATE.....

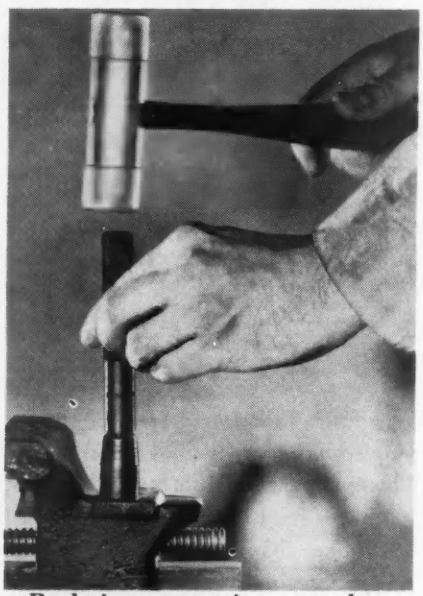
regular to premium quality with precision control. A built-in signal automatically shows the end cut-off. No attention is needed in operation. *Check NP* 272.

Changeable Magnet Sockets

SNAP-ON Tools Corp. recently added a new type of magnetic replacement socket to its line of industrial

Cutaway view of magnetic socket.

sockets. This new socket is equipped with removable and replaceable magnets and is available in 1/4-, 5/16-, 3/8-, 7/16-, 1/2-, and 9/16-inch sizes.



Replacing magnet in new socket.

The socket is also available without the magnet.

A special assembly tool inserts magnets into new sockets quickly, simply, and to exactly the right depth for proper magnetic contact with screw head. *Check NP* 273.

"Subscriber Carrier System"

(Continued from page 47)

rier channels for dropping off one or more channels at a subscriber carrier terminal. See *Figure Five* for typical applications of line filters.

High pass filters (transfer, sectionalizing, or directional type) are used for isolating two voice frequency circuits on the same physical line without interfering with the passage of carrier frequency currents. This enables voice frequency currents derived from a carrier channel to feed back from a subscriber's terminal over the same physical circuit used for the carrier channels. The high pass transfer filter keeps the voice frequency currents from going back to the central office or interfering with the other voice frequency group as shown in *Figure Five.*

Band pass filters are used in carrier terminating equipment to segregate the carrier channels for passing to separate demodulators that convert the carrier fluctuations into voice frequency currents in the receiving portion. Band pass filters are also used in the transmitting portion of the carrier terminal equipment. On the carrier line, a band pass filter may be used to admit one or more carrier groups into a branch circuit and suppress the other frequencies. A band elimination filter may also be employed to produce the reverse effect and admit the rejected frequencies while eliminating the frequencies passed by the band filter.

Impedance Matching Arrangements

IN THE transmission of intelligence via carrier and voice frequency circuits, one condition affects the transmission characteristic, sometimes to a serious degree. This is impedance mismatch which gives rise to distortion, attenuation, and echoes, caused by wave reflections at junctions between two parts of the circuit having different impedances.

In a circuit with an a-c power source, the maximum power is transmitted to the receiving end when the impedance of the sending end is equal to that of the receiving end. However, reflection losses will still occur if the reactance of the load is of opposite sign from the reactance of the source, that is, if one is inductive and the other capacitive. Hence for true impedance matching, the load reactance must equal the source reactance and be of the same kind.

Repeating coils or transformers are used at junctions between two parts of a circuit having unequal impedances, as in the case of open wire to cable. An open-wire pair has a nominal impedance of 600 ohms, while a cable pair has 135 or 150 ohms impedance, according to the type of the cable. The ratio of the two impedances is equal to the square of the turns ratio of the line and drop side windings or:

$$\frac{Z_1}{Z_2} = \left(\frac{N_1}{N_2}\right)^2$$

Impedance matching to prevent reflective losses is also important in electric wave filters. In this case, the filter must be terminated by its iterative impedance which is the same as the characteristic impedance of the line. Methods of computing the iterative impedance are treated in detail in textbooks on transmission networks and wave filters. — *To Be Continued.*

"The Coming Revolution"

(Continued from page 44)

means, and is termed "side-tone," as an aid to the person using the telephone instrument.

The ideal situation, from a technical standpoint, would be the use of four wires to every telephone instrument — one pair of conductors for the transmitting path and one pair of conductors for the receiving path. By such means, almost unlimited gains could be achieved with very little problems due to feed-back and consequent "singing" of the circuit.

Economic considerations dictated the use of two-wire circuits and practically all telephone usage in the United States is predicated upon the use of two-wire circuits to the actual instrument. With the advent of greater upgrading of toll circuits, multi-switchpoints through means of automatic switching machines, greater use of carrier channels, and lower Via Net Loss (VNL), a much greater use of four-wire circuits is being made. This is true of not only toll circuits but, also, of office linkages and practically all circuits with the exception of the subscriber loop. All indications are that this practice will increase with the advent of electronic switching. — *To be continued.*

EDITOR'S NOTE: — *In the next issue, Mr. Ehinger will discuss the hybrid coil and begin a discussion of circuit bandwidth requirements.*

FRONT COVER

FORTY-FIVE telephone engineers turned to the broad field of economics for additional training at the Telephone Engineering Conference sponsored by the United States Independent Telephone Association at Michigan State University June 28-July 17.

The engineers & MSU representatives shown on TE&M's front cover are: Front row (L. to R.): Leslie B. Harmer, James C. Friederichs, Robert D. Ator, John M. Becker, J. J. Lyons, Milton E. Wilson, Norman H. Loseke, J. D. Tuck, and Donald K. Van Dyke.

Second row (L. to R.): Jack F. Wegforth, George H. Sherer, Bobby J. Gothard, Thomas O. Brock, Jr., Anatole Gruehr, Joseph L. Siegley, Jr., Thomas L. Dahle, George W. Hall, James C. King, Allen W. Hughes, John U. Jeffries, I. B. Jackson, Dan Fusfeld, and Charles R. Robinson.

Third row (L. to R.): Ray J. Alter, Thomas W. Wright, James Corbett, Leo P. McGuire, Stuart Biery, James C. Watkins, John C. Mau, John Blaine Noggle, Herbert K. Miller, Raymond Soard, Jr., John Hall, Jr., Don R. Bradley, and Gerald P. Lockhart.

Fourth row (L. to R.): Merle K. Kessel, Hugh Pulliam, Ralph Driskill, Joseph P. Jallits, James Andrew Arnold, James A. Lancaster, Adam E. Horn, Merritt Scharnweber, Kenneth M. Kilburn, Wayne W. Putnam, Harold H. Hagen, Maurice H. Esperseth, Donald P. Greenland, and Richard P. Decker.

From pliers to pumps, from hammers to hoists, AE provides a complete line of large and small tools for you. In most cases, your order is picked from stock and shipped the same day it arrives in our warehouse.

We hope to do business with your grandson! AE plans to be in the telephone supply business for many, many years ahead. We want to receive tool orders from you... your son...and even your grandson. And, the best way we can do this is to give you *prompt delivery* from a *large stock* of *famous brands.* Please give us a call. Let us prove that—at AE, you get all 3.

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	ELgin 8-9280	CApital 3-7244	SWarthmore 7-8507	HArrison 1-7575

AUTOMATIC ELECTRIC

Subsidiary of
GENERAL TELEPHONE & ELECTRONICS

GENERAL SYSTEM

70 persons attended recent meeting of Texas Pioneers.

Texas Pioneers Hold 3-Day Meeting

THE TEXAS CHAPTER of the Independent Telephone Pioneer Association held a meeting at the Flying Fish Lodge on Caddo Lake in East Texas, June 19 through June 21.

Over 70 persons attended the 3-day meeting and spent the weekend relaxing at the lake, playing bridge, fishing and swimming. A brief business session was held on June 21. Mrs. Winnie Burnett, Brownwood, Texas, president of the group, presided at the meeting.

Dee Cole, Greenville, Texas, owner of the Quinlan Telephone Co. and first vice-president of the Texas Chapter, was in charge of the arrangements. Arrangements are now being made for a similar meeting in the central part of Texas, early this fall.

Gen. Tel. Moves To New Headquarters Bldg.

GENERAL Telephone & Electronics Corp. has moved its headquarters from 260 Madison Ave. to the new General Telephone Building at 730 Third Ave., New York City.

Joining the headquarters group in the new building will be the executive and central corporate departments of Sylvania Electric Products Inc., recently merged with General, and the New York office of Automatic Electric Sales Co., a subsidiary. Seventeen of the tower floors of the building will be occupied by Gen. Tel. Ten lower floors are occupied by Teachers' Insurance Annuity Association.

Sylvania's International Division and several domestic sales organizations will remain at 1740 Broadway, New York City.

Orange County Tel. Names Three To New Positions

CHARLES C. CHAPPELL, president of Orange County Telephone Co., Middletown, N. Y., has announced that company directors have confirmed the promotions of three members of the firm.

Roy J. Miller was promoted to equipment manager and assumes the duties formerly performed by Edward R. Davenport, who retired in February after serving 52 years with the company.

Miller started with the company in July, 1948, and was advanced to central office supervisor in January, 1955. In February, 1956, he was named assistant equipment manager. In his new position as equipment manager, he will be responsible for the engineering, installation and maintenance of central office equipment at the nine exchanges operated by the company.

ROY J. MILLER

Albert L. Dyson was named general auditor. He will be in complete charge of all accounting, including the electric accounting machine bureau responsible for mechanized subscriber billing.

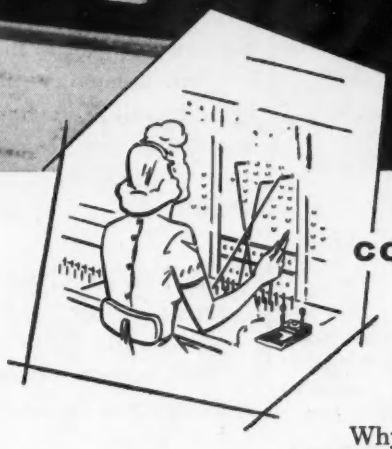
ALBERT L. DYSON

Dyson, a graduate of Rider College with a degree of bachelor of science in business administration, has served as assistant auditor for the past five years under Miss Agnes V. Rowell, who recently retired after serving the company for 55 years.

Charles M. Lupton, who has been

CALCULAGRAPH'S NEW 60-minute dial . . .

SIMPLIFIES TOLL CALL RECORDS



CONVERT YOUR SWITCHBOARD NOW!

Busy telephone operators are finding the new Calculagraph 60-minute dial *easier to use* and they can now handle more calls more efficiently.

Why? Because they don't have to remember to stop and add 30-minutes to long conversations. This new 60-minute Calculagraph dial does it for them.

This new Calculagraph 60-minute dial assures you, too, of *all charges* due on every call. If you now have 30-minute dials, you can convert your Calculagraphs to the 60-minute dial.

Whether your needs can be met with either the 30-minute or 60-minute dial you can be assured of *100% accuracy* on *all toll calls* with Calculagraphs on *your* switchboard.

Write today for complete information.

CALCULAGRAPH Company

308 Sussex Street • Harrison, New Jersey

MANUFACTURERS OF ELAPSED TIME RECORDERS FOR OVER 65 YEARS

Transite's installed cost is less because your crews spend virtually all of their time with the actual installation of duct.

Now–save 5¢...10¢... up to 15¢ per duct foot!

Here's why Transite Telephone Ducts offer these substantial savings in installed cost!

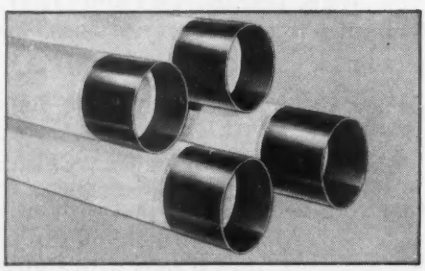
In virtually every part of the nation installations of Transite® Telephone Ducts are at a new high!

Why? For the simple reason that no other material offers so many practical advantages . . . with each contributing to lower *installed* costs. In fact, savings can run as high as 15¢ per duct foot!

With Transite you're working faster, easier . . . with smaller crews. For there's no complex joining and difficult positioning. Instead, the 10' Transite lengths are easily handled by one man. And the plastic coupling used with Transite makes a tight joint that goes together in seconds . . . stays tight for the life of the line.

More time and labor are saved in splaying...curving...bypassing...and in manhole connections! Every one of these on-the-job requirements is met with a minimum of "extra" in time and material.

With Transite you have fewer items to stock, less warehousing, lower inventory costs. There's less handling of material all around. As for breakage, there's practically none. Savings are substantial.



Write today for brochure TR-239A, "Transite Telephone Ducts." It gives complete information on why Transite's installed cost is lower . . . as well as why it reduces future costs in cleaning, rodding and repair. Address Johns-Manville, Box 14, New York 16, N. Y. In Canada, Port Credit, Ont.

JOHNS-MANVILLE JM PRODUCTS

plant accountant for the past five years, will assume the additional duties of the purchasing agent following the recent retirement of Fred R. Yaeger, who held this position for many years. Lupton started with the

C. M. LUPTON

company in September, 1936, and was advanced to plant accountant in September, 1953. In his new position as plant accountant and purchasing agent he will be in charge of all plant accounting and responsible to the general manager for the purchase of all materials and supplies.

Gen. Tel. of Ohio Names Miller Staff Ass't.

KURT M. MILLER has been named general plant department staff assistant for General Telephone Co. of Ohio.

In his new assignment Miller will be engaged in the development and continuance of budget control procedures for plant operations, including the analysis of unit measurements on the company's installation and maintenance projects.

Frank A. Dresslar, Sr., Heads S. Nevada Tel. Co.

FRANK A. Dresslar, Sr., will become president, chairman of the board, and director of Southern Nevada Telephone Co., effective on September 1, 1959. This position has been vacant since the death of Allye Lawson on April 13, 1959.

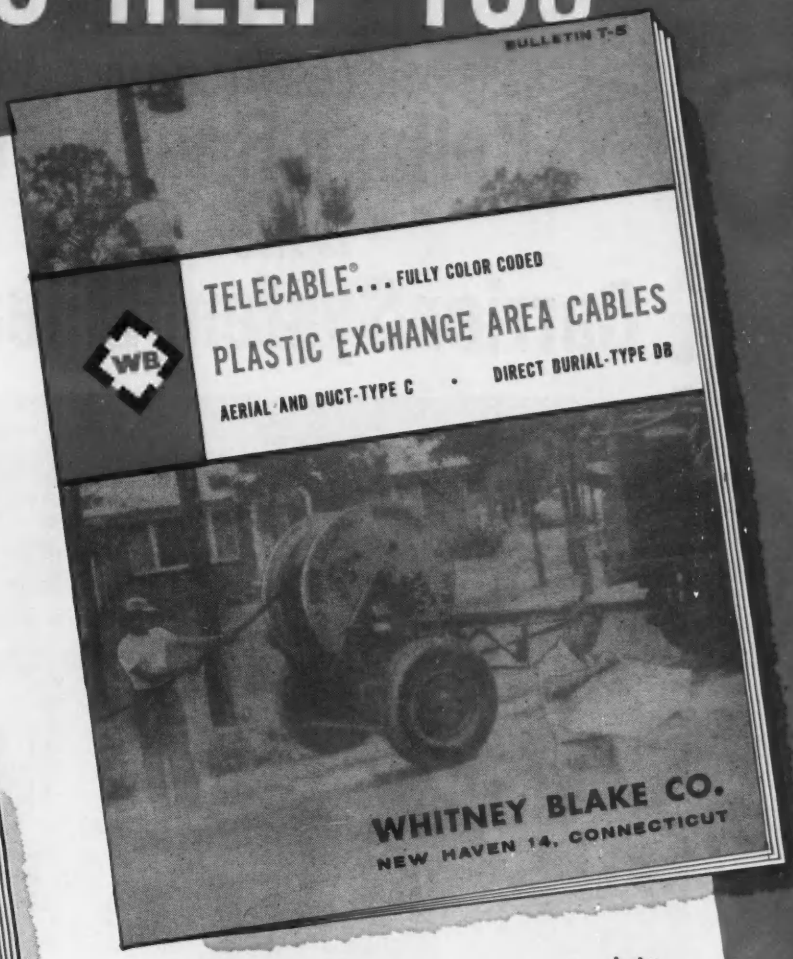
Dresslar brings to Southern Nevada

THESE CATALOGS ARE . . .
DESIGNED TO HELP YOU

This up-to-date catalog gives complete information on the new Whitney Blake TELECABLE line:

Fully Color Coded
Plastic Exchange Area Cables
Aerial & Duct (REA Spec. PE-22)
Direct Burial (REA Spec. PE-23)

The catalog aids you in finding your requirements quickly and easily. Fill out the coupon and mail today—it's FREE, of course.


BULLETIN T-5
TELECABLE®... FULLY COLOR CODED
PLASTIC EXCHANGE AREA CABLES
AERIAL AND DUCT-TYPE C • DIRECT BURIAL-TYPE DB
WHITNEY BLAKE CO.
NEW HAVEN 14, CONNECTICUT

Koiled Kords
THE ORIGINAL RETRACTILE CORD OF A THOUSAND USES IN COMMUNICATIONS HOME AND INDUSTRY
IF IT IS ELECTRICAL AND MOVES IT NEEDS KOILED KORDS

Koiled Kords retractile cords are up to date with the tastes of the public, particularly for use in matching or contrasting shades on colored telephones.

This catalog provides complete ordering information on telephone replacement cords arranged so that the "type telephone" is the primary reference, with our catalog number following.

Koiled Kords Catalog No. 582 will be sent to you FREE. Just fill out the coupon and mail today.

WHITNEY BLAKE CO.
NEW HAVEN 14, CONNECTICUT
TELEPHONE CHestnut 8-5515 · TWX: NH84

FILL IN THIS COUPON AND MAIL IT TODAY

Whitney Blake Company, 1565 Dixwell Avenue
New Haven 14, Connecticut

Please send me a copy of your *New Free*

KOILED KORDS CATALOG #582 ☐
TELEPHONE CABLE CATALOG T-5 ☐

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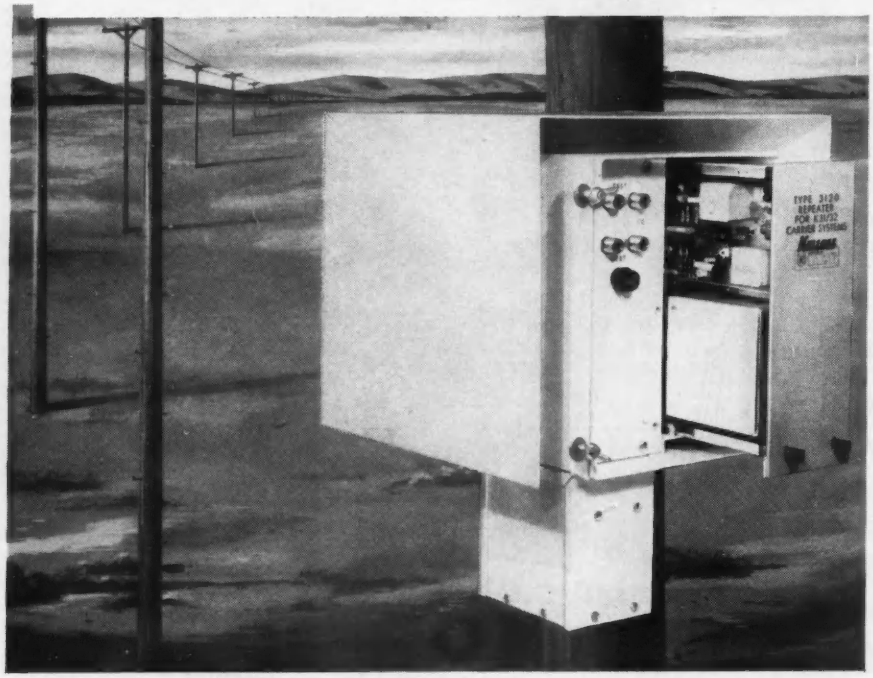
COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

K-31
with the new
Kellogg Repeater
doubles
Carrier System Mileage!



The only system offering a Repeater

Check these advantages:

- ☑ Kellogg's exclusive new repeater *doubles* the mileage you get from your K-31 carrier system.
- ☑ Two repeaters *triple* your carrier mileage.
- ☑ And Kellogg repeaters are surprisingly low in cost!
- ☑ Kellogg Carrier offers more exclusive features than any other system on the market (see facing page).
- ☑ Kellogg's low price is complete, "no extras."

That's why you'll find Kellogg K-31 Rural Subscriber Carrier being installed by more and more independents across the country.

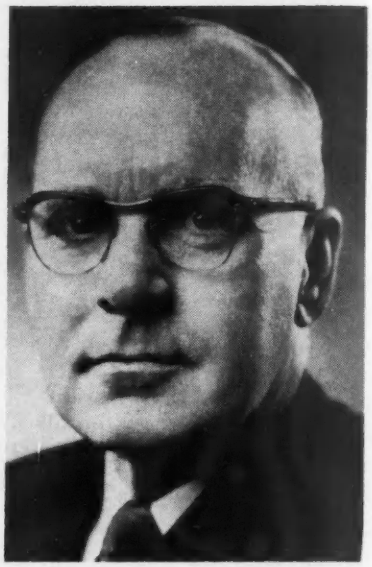
For more details on Kellogg Carrier see our ad on the facing page, then . . . call Kellogg for complete information.

KELLOGG — Communications Division of ITT — CHICAGO, ILLINOIS

Kellogg Switchboard and Supply Company
6650 South Cicero Avenue, Chicago 38, Ill.
Communications Division of International Telephone and Telegraph Corporation.

See page 23 for list of Kellogg offices

Telephone Co. a wealth of experience in nearly every phase of the telephone business. He has spent 40 years in the employ of Pacific Telephone & Telegraph Co., serving as a vice president for almost 18 years in various executive capacities in that company's headquarters in San Francisco as well



FRANK A. DRESSLAR

as in Oregon. For the past 10 years he has been vice president and general manager in charge of over-all operations for the State of Oregon.

General Cable Acquires Indiana Steel & Wire Co.

INDIANA Steel & Wire Co., Inc. has been acquired by the General Cable Corp., it has been announced by James R. MacDonald, chairman of the board and president of General Cable Corp.

For over half a century Indiana Steel & Wire Co., Inc. has set the pace in creating, developing and improving galvanized wire and strand used in overhead line construction for communication and power transmission. The reputation for consistently dependable quality enjoyed by CRAPO Galvanized Products over the years is due to this intense specialization.

The manufacturing operations of Indiana Steel are located in Muncie, Indiana. Fred M. Crapo, president of Indiana Steel & Wire Co., will continue as its president and chief executive officer and will also be vice-president of General Cable.

Kellogg Swbd. Introduces New Electronic "Sentinel"

COMMSWITCH, an electronic "sentinel" that assures uninterrupted voice communications essential to successful missile launchings, was demonstrated recently by Kellogg Switchboard & Supply Co., Chicago, a division of International Telephone & Telegraph Corp. Kellogg, which has charge of communications systems for the Atlas and Titan missiles, has already installed the "sentinels" at Vandenberg Air Force Base in California, Kellogg officials stated.

The Commswitch (for Communication Failure Detecting and Switching Equipment) "listens" to a telephone conversation, decides whether trouble along the line is making service unsatisfactory and, if so, instantly switches the call to an alternate line.

Additionally, the instrument prevents the injection of false information on the line and even warns the operator of incipient trouble, engineers declared.

"The significance of the function of Commswitch," according to Major Walter D. Hale, communications officer of the Air Force's Ballistics Missile Division, "is that it guarantees fail-safe communication between important functionaries in the weapon system, thus precluding delays or failures in the capability of counting down and launching a ballistics missile."

Commswitch, a "black box" about the size of a two-drawer filing cabinet, operates by sending an analog voice sample with the voice signal along a telephone line and "comparing" the two signals in a second Commswitch at the other end of the line being monitored. Differences in voltages between the compared signals indicate the existence and degree of trouble. Such trouble might be electrical "noise" which could drown out the signal, or changes in the transmission characteristics of the line or its associated equipment which might distort the signal, or even a broken line.

In its present design, Commswitch is for use with two high quality telephone lines, a primary and an alternate, and monitors two-way voice

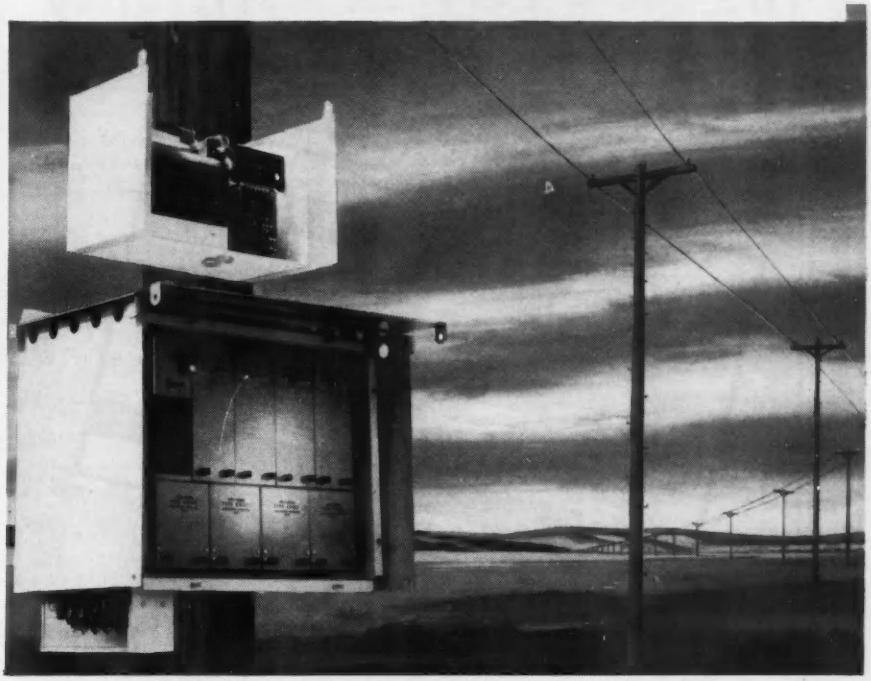
K-31

offers all these features

At Lower Cost

than any other

Carrier System!



☑ *Built-In Stand-By Power* as standard equipment! Sufficient to operate 4 channels for 12 hours if commercial power fails.

☑ *Built-In Compandors!* Reduce line noise and cross-talk on open wire line so that circuits meet transmission standards.

☑ *Automatic Regulation!* Maintains constant output level regardless of line loss variation due to changing weather conditions.

☑ *Completely Transistorized!* Including power supply! Guarantees steady toll quality performance.

Best of all, the low cost of the complete systems, "no extras," will enable you to prove it even on short distances.

Call Kellogg . . . and get full details on telephony's *most effective and economical* carrier system.

DON'T FORGET, only one relay is required for each terminal of Kellogg's K-32 Trunk Line Carrier.

KELLOGG Communications Division of IT&T
CHICAGO, ILLINOIS

Kellogg Switchboard and Supply Company
6650 South Cicero Avenue, Chicago 38, Ill.
Communications Division of International Telephone and Telegraph Corporation.

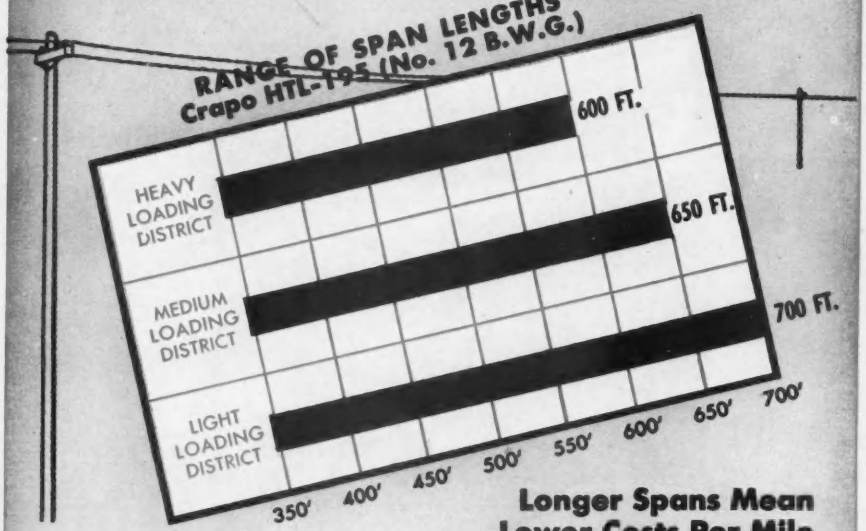
See page 37 for list of Kellogg offices

Crapo

HTL-195

FOR EXTRA LONG SPAN RURAL LINES

The *NEW LOWER* Resistance Extra-High Tensile Line Wire



Longer Spans Mean Lower Costs Per Mile

You can cut the number of pole structures to a minimum when you use Crapo HTL-195 in building rural telephone lines. Extra long span construction, made possible by the high physical strength of this new wire, means marked savings in material and installation costs.

The voice transmission quality of Crapo HTL-195 is equal to that of Crapo HTL-135 and superior to older grades of ferrous wire.

Pertinent technical data have been prepared to assist engineers in designing and building extra long span lines with Crapo HTL-195.

WRITE TODAY for FREE COPY of the CRAPO HTL-195 "Manual of Engineering Data" No. A-195

INDIANA STEEL & WIRE COMPANY, INC.
MUNCIE, INDIANA

communication only. However, the device may be constructed to handle more than two lines and is applicable, with slight modification, to other types of signals sent over transmission lines, Kellogg engineers declared.

Possible future use would include transmissions for operating teletypewriter machines, stock tickers, telemetering signals for remotely controlling machinery used in oil fields, hydro-electrical plants and traffic control setups, and wherever it is mandatory to minimize any interruption of transmission. The equipment is designed to operate over cable or equivalent microwave circuits at distances up to sixty miles and is designed so that both ends of the land-line or microwave are switched simultaneously.

Although the Commswitch is being packaged for the Atlas project, it is not yet available for commercial use. Completely transistorized, it is designed to be mounted in a conventional electrical equipment rack. A lighted panel on the front of the device indicates whether the primary or secondary telephone line is in use, whether trouble exists in either of the two lines and whether the Commswitch itself is working properly. In the event of trouble anywhere in the system, an audio alarm is sounded and red lights indicate where the trouble exists. If trouble strikes both lines, the Commswitch can tell which line is least affected so as to choose that line.

Application Procedure Booklet

HOW TO make uniform ties every time without the use of tools is presented in a pocket-sized, illustrated booklet (No. 81-301) describing the new one-piece Preformed Communications Tie.

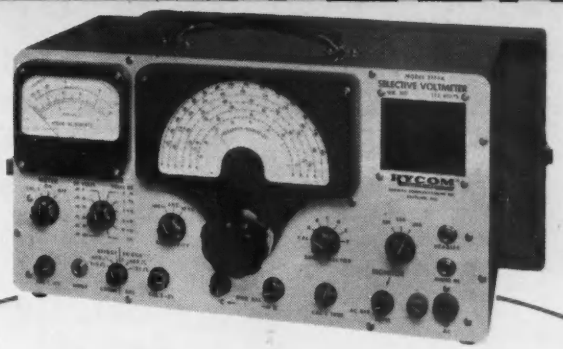
In addition, the booklet charts various sizes of Preformed Communications Ties as they relate to corresponding insulators and open line wire diameters. The booklet is proportioned to fit either in the lineman's pocket or his Handbook.

Copies are immediately available upon request to *Preformed Line Products Co., 5349 St. Claire Avenue, Dept. TE&M, Cleveland 3, Ohio.*

FREQUENCY SELECTIVE VOLTMETER

WAVE ANALYZER

Offers fast accurate amplitude measurements throughout the frequency spectrum of 300 cycles to 400 Kc



Model 2174

This instrument utilizes the heterodyne principle with balanced modulation and highly selective crystal filters which achieve the high resolution needed for accurate amplitude measurements of Carrier and Microwave Sub Carrier channels.

Direct reading in DBM for 135 and 600 ohm circuits or bridging.

SPECIFICATIONS
Model 2174 and 2174-A

Frequency Range: 300 cycles to 400 Kc. Level:—72 dbm to + 32 dbm (full scale) at 600 OHMS Accuracy: ± .5db from —80 to +32 dbm; 1 to 400 Kc. Selectivity: 6db down 80 cycles off: 60 db down 480 cycles off. Wider crystal filter and demodulator for monitoring SSB, AM, and FM—internal speaker and headset jack. Spurious Response: Below 60db. Low intermodulation: Below 60 db. Power Requirements: 115V, 50/60 cycles—48 Watts. Weight, 28 lbs.

RYCOM® INSTRUMENTS

A Division of:
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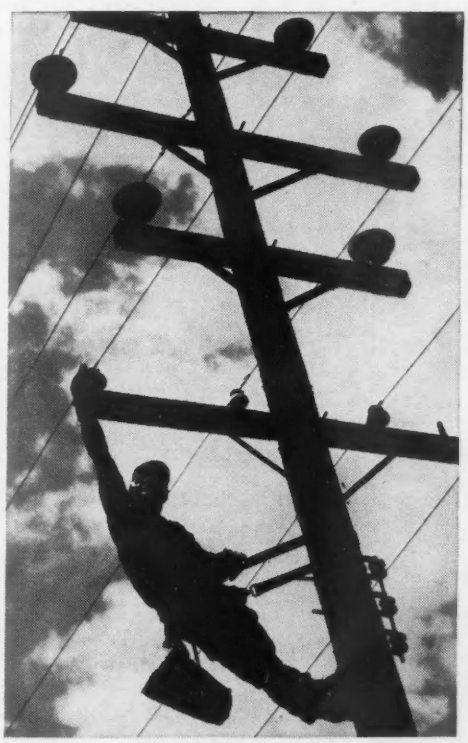
How can you cut down on telephone pole maintenance?



String your lines with USS Tiger Brand Amertel 195.

When you use Amertel 195 to string your rural telephone lines, you get a real bonus. Much longer spans are possible—up to 700 feet. Fewer poles are needed; reducing the time and expense of pole maintenance per mile of line.

Amertel 195 has other important advantages too:

- Longer spans, fewer poles, means lower installation costs.
- Rivers, gullies, valleys, can be strung easily and economically.
- Amertel 195 withstands severe weather conditions, reducing service interruptions. It resists breakage even under heavy ice loads.
- The extra low resistivity of this quality wire assures improved voice transmission efficiency even at relatively high frequencies.

More information is given in our new booklet. For your copy, write to American Steel & Wire, Dept. 9177, 614 Superior Ave., N. W., Cleveland 13, Ohio.

USS, Tiger Brand and Amertel are trademarks

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Those in attendance at Gen. Tel. Dir. publishing conference are, left to right, seated at the table: THOMAS W. JAMES, Trade Mark Publishing Supvsr., Des Plaines; JOHN E. GRIFFENHAGEN, Publishing Mgr., Long Beach; RONALD SEIBT, Assistant Publishing Mgr., Des Plaines; WALTER L. PHILLIPS, Publishing Mgr., Tampa; DEAN R. PORTER, Publishing Mgr., Des Plaines; O. D. SWANSON, Vice President-Production, Des Plaines; WESLEY H. LOOMIS, III, President, Des Plaines; FRANK W. BRONIARCZYK, Printing Superintendent, Des Plaines; G. H. KOENIG, Publishing Mgr., San Angelo; JOHN P. McMINN, Schedule Coordinator, Des Plaines; C. W. NIELSEN, Assistant Publishing Mgr., Long Beach. Second row seated: H. DUNCAN PRICE JR., Director of Public Relations, Des Plaines; G. L. HEDBERG, Production Supvsr., Des Plaines; REX C. SCHOFIELD, Publishing Supvsr., Vancouver; SCOTT B. BALL, Production Supvsr., Des Plaines; PAUL SIEGERT, Methods & Procedures Analyst, Des Plaines; EDWARD F. SUMMERS, Services & Supplies Supvsr., Des Plaines. Standing: CARL E. NUSS, Publishing Mgr., Spokane, and RICHARD G. FICK, Assistant Publishing Mgr., Des Plaines.

Gen. Tel. Directory Co. Holds Publishing Conference

THE PUBLISHING managers from Tampa, Fla.; Long Beach, Calif.; San Angelo, Tex.; Spokane, Wash.; Vancouver, B. C. and Des Plaines, Ill. recently held a three-day meeting in Des Plaines. O. D. Swanson, vice president-production, stated that the purpose of the meeting was to review all procedures and forms used by Publishing to ascertain that the most accurate and effective procedures were being used by all publishing offices and that standardized procedures and forms were used whenever possible.

The meeting was opened by Wesley H. Loomis III, president of General Telephone Directory Company, who explained the importance of publishing in the complete directory operation. He emphasized the responsibility of Publishing in assuring accurate directories and noted the recent improvements in the reduction of errors.

Vice President O. D. Swanson hailed the conference a success and said the enthusiastic participation by those in attendance could be contributed to the progressive attitude dominant throughout Gen. Tel. Directory Co.

Hubbard Names New General Sales Manager

THOMAS Hollingsworth has been appointed general sales manager of Hubbard and Company. He will operate out of their Chicago executive offices. Hollingsworth was most recently director of marketing for Electrical Engineers Equipment Co., a Hubbard subsidiary.

THOMAS HOLLINGSWORTH

Before joining Hubbard, Hollingsworth was manager of product planning for the Westinghouse Electric Corp.

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WITH A *Rolatape* MEASURING WHEEL

Take all your outdoor measurements this modern, time saving way. ROLATAPE reduces the risk of human error, since it records precise measurements in feet as it is rolled along—automatically and in full view of the operator. Sturdy, lightweight; equipped with automatic brake and built-in stand. Handle folds compactly.

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FOR SALE

MAGNETO TELEPHONES — Leich 901 wall or desk magneto telephones. Cleaned, tested and guaranteed, $16.50 each. As removed from service, $15.00 each. Turtle Lake Tel. Co., Turtle Lake, Wisc.

NORTH ELECTRIC MCXR-400 all-relay dial switchboard, 100 lines, 8 links, long lines, 3 toll trunks 3 paystation lines, A & B allotters. Available immediately. Located at Wessington, South Dakota. Submit bid to Sully-Buttes Telephone Cooperative, Inc., Highmore, S. D., by September 16.

STERLING hydraulic digger Model G4, Serial #G4103, equipped with swing mount, pole setter and winch, Vicor valve. Mounted on Chevrolet 4 wheel drive truck. Write or call Keystone Telephone Service Co., Inc., Export, Pennsylvania. FAirview 7-3131.

KELLOGG magneto switchboard, 150 lines, Sub-Cycle, main frame, kick coils, 24 volt battery charger, Leich 901 magneto phones, common battery phones, old style wall phones converted to handset. Left over from dial conversion and offered in serviceable condition. Telephone Service Company, Mullinville, Kansas.

TELEPHONES — Western Electric 302-(251) with 5H dials, completely reconditioned, neoprene cords. Metropolitan plates and new finger wheels. Ringer frequency SL-16-20-30-42-54 and 56. Satisfaction guaranteed. $10.00 each. Overseas shipments made. W. E. Quattlebaum, Jr., c/o Tri-County Telephone Co., Bonifay, Florida.

200 LINES 50 link dial system: including 200 wall phones, motor generator, 14 cases new relays and spare parts. North Electric NX200 ship service, 48 volts. Henry Vester 3220 E. 29th. Kansas City, Missouri.

INSULATORS, telephone, War Surplus, Sig. Corps No. IN 56, two-groove, metal lag screw attached, overall length 5¼", insulator 2½", width 1¼". 3½c ea. Sutton Co., 151 W. 56th Ave., Denver 16, Colo.

SWITCHBOARD LAMPS 44A2 used 15¢; New 44V, 2Y, B-2, 48B, E-1, 6C, 60A, HP, 25¢. 121-83 Lamp strips 129-90A Line jack strips $2.50 each, pair $4.50; #29 Lamp caps, private, 4 pty, 10¢; S. C. 5AL subs. lines, 20 per Mtg., $1.00 line. Cord weights, type 100 Protectors, floor type cook MDF. Chris Finn, Plant Manager, c/o Mid-Texas Tel. Co., Killeen, Texas.

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WANTED — Old W. E. magneto switchboards with drop door type combined drops and jacks — #22C or equivalent. Call collect. Bohnsack Equipment Company, Germantown, New York — 213.

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This unique and compact unit does the job of two relays and a light. The relay-indicator unit consists of two wire wound coils that operate and reset a small ball indicator behind a clear glass window. The resistance of the operate and reset windings is 2000 and 1000 ohms respectively. In addition, a set of contacts is an integral part of the unit and may be used for operating any type of low voltage alarm desired. The entire unit is hermetically sealed and requires a single ⅝" mounting hole.

Single Lot
$2.50
•
WRITE FOR QUANTITY PRICES

Operates on 6-12 Volts D.C.

WRITE FOR LATEST FLYER

TELEPHONE SUPPLY CORP.
421 WEST GARVEY • EL MONTE, CALIF.
CUmberland 3-1658 • Gilbert 4-0341

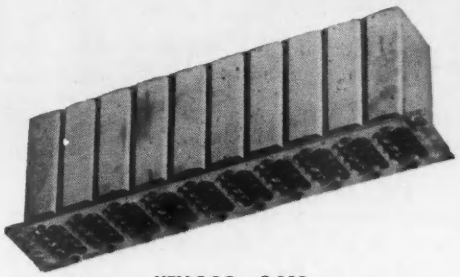
MAGNETO HANDSETS
WALL OR DESK
LEICH 901
(RECONDITIONED)

- **1600 Ohm Ringers**
- **Neoprene Cords**

No Changes Necessary to Use as Desk or Wall Telephone

BUCKEYE TELEPHONE & SUPPLY CO.
1250 Kinnear Rd. — HU 8-0655 — Columbus 21, Ohio

PLAN TO CONVERT
Magneto To Dial



KELLOGG C-111

Start now by using CB phones in town — one of these coils connected to each drop, thru condenser to common battery will provide CB service on that line. Subscriber signals operator by lifting handset and rings off by restoring it.

New $1.50 Used—A-1 $1.00

Mounting—10 coil for 19" rack $2.50

Condensers for use with above 2.MF. Stromberg-Carlson 50c

TELEPHONES
(completely reconditioned)

Western Electric #302 with F-I handset, 5-H dial. Ringers; St. Line, Synchromonic 16, 30, 42, 54, 66 cycle. Ready for service—immediate delivery $12.50

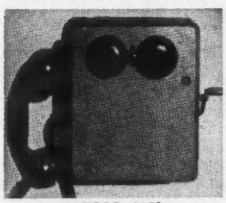
#302, as above, equipped with F-4 handset with T-1 transmitter—U-1 receiver (500 type) $15.00

#302, as above, but blanked for dial (F-1) $10.00

A.E. type 40, St. line, 16, 30, 42, 54, 66 cycle ringers, with #24 or later type dial (fully reconditioned) $12.50

(coiled handset cords, add 50 cents)

Brand New $12.50 each in std. package 8 or 10
Kellogg #5812 MX



5812 MX

5 bar, 1600 ohm, anti-sidetone circuit. Complete with F27 handset coiled cord. Oak cabinet, painted dull green. New and perfect—original factory pack .....$12.50 each

Less than 8 or 10 .....$13.50 each

PIECE PARTS

Kellogg #83-B (48 ohm) capsule type receivers to replace diaphram receivers in F-27, etc., handsets, New	$ 1.00 Each
Receiver Caps P-69426-3 (required for conversion)	.20 Each
Kellogg Transmitters, New	.50 Each
Handsets, W.E. E-1, F-1, F-3, A.E. 41, Kellogg F-27, etc.	
Long Receivers, W.E., A.E., Kellogg, New	1.50 Each
Modern Transmitter fronts with capsule, New	1.50 Each
Kellogg Housing for #925 (P-58724), New..	1.00 Each

All New Material (unless otherwise noted) priced F.O.B. Los Angeles
Shipped on Approval—Satisfaction Guaranteed

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ADDING POSITIONS or LINES to your manual exchange?

Kellogg - W.E. - Stromberg-Carlson
(New or good used)

LINE—LAMP JACKS
TRUNK EQUIPMENT
CORD CIRCUITS
REPEATING COILS
SWBD CABLE, braid-plastic-lead

COMPLETE POSITIONS
CB - Universal - Magneto

Kellogg - W.E. - Stromberg-Carlson
also
PBX, cord & cordless

quoted "as removed from service" or "completely reconditioned"

Tell us what you need— let us quote from stock on hand—

Our *Low Prices* on A-1 equipment will *astound* you.

MDF PROTECTION

Western Electric (fully equipped)

#C 50 A, 50 pr. group, new	$40.
reconditioned	25.
C 52 A, 52 pr. new	42.
reconditioned	27.
C 25 A, 25 pr. (½ of C50), new	20.
1268 A, 20 pr. new	10.
1268 B, 23 pr. new	12.
1269 A, 20 pr., new	10.
1435W(1269-A-wood base), new	10.
1435 U, Fuse group, new	5.
Heat Coils. 76A, new	10¢

Frames, MDF, W.E. & Cook
6 & 8 ft., single or up to 5 verticals in unit—save over half.

FUSES, 35A, B, C, H, S. New, 10¢. ($9 hund., $80 thousand) 75,000 in stock (standard W.E. pack, 10 or 50)

OPEN WIRE PROTECTION

WE #83A (#84A in wp. mtg. box, 5 pr. block equipped with #26 & #30)
New $5.00—Reconditioned $4.00

Cable Terminals—Most Types

ADVERTISING, DIRECTORIES — *General Telephone Directory Co., 1800 Oakton Street, Des Plaines, Ill.*

BELTS — CLIMBERS — COMPLETE LINEMEN'S EQUIPMENT, *W. M. Bashlin Co., Bashlin Bldg., Grove City 1, Pa.*

BOOTHS — Telephone — Outdoor — Indoor — Steel — Stainless Steel — *Sherron Metallic Corp., 1201 Flushing Ave., Brooklyn 37, N. Y.*

BORING MACHINES, EARTH — *Highway Trailer Co., Edgerton, Wisc.*

CORDS, Switchboard (with or without plugs), Instrument (straight and retractile) cords in eleven colors. — *Commercial Cord Co., Inc., 26 Main St., Clifton Springs, N. Y.*

CORDS, Switchboard & Telephone — *Runzel Cord & Wire Co., 4727-31 Montrose Ave., Chicago 41, Ill.*

POLES, Creosote & Creosote Penta-Treated, Southern Yellow Pine — *Piedmont Wood Preserving Co., P.O. Box 700, Augusta, Georgia.*

POLES, Southern Yellow Pine — *Taylor Colquitt Company, 217 E. Main St., Spartanburgh, S. C.*

POLES, Southern Yellow Pine — *Texas Creosoting Co., Orange, Texas.*

PROTECTIVE EQUIPMENT — *Reliable Electric Company, 11333 Addison St., Franklin Park, Ill.*

TELEPHONE EQUIPMENT AND SUPPLIES — *Telephone Repair & Supply Company, 1760 Lunt Avenue, Chicago 26, Ill.*

WIRE, INSULATED — DATED DROP WIRES and all types of telephone wires — *Alphaduct Wire & Cable Company, New Brunswick, N. J.*

WIRE, Insulated Drop and Bronze or Copperweld — *Acorn Insulated Wire Co., Inc., 36 Freeman St., Pawtucket, R. I.*

C. R. Lane To Head Andrew Sales

C. ROBERT Lane was recently promoted to the position of sales manager of Andrew Corporation. He has been associated with the company four years as eastern regional manager, with offices in Westwood, Massachusetts, and had extensive engineering experience in antenna systems prior to joining Andrew. Lane will direct the company's expanding national and international sales activities from their Chicago offices.

C. ROBERT LANE

Robert C. Bickel has been named marketing manager and will assume responsibility for the company's product planning and all other marketing activities, except sales.

New District Sales Manager For Page Steel & Wire

JOHN C. Cassidy has been appointed district sales mgr. of Chicago for the Page Steel & Wire Div., American Chain & Cable Co., Inc. The Chicago district covers the states of Ill., Kans., Ind., Wis., and Minn.

Cassidy had been district sales mgr. of Page's Houston, Texas territory.

Cassidy joined American Chain & Cable Co. in 1949 after graduation from Western Reserve University with a degree in business administration.

Gadbois Appointed Ass't. Div. Mgr. of Gen. Tel. Dir.

PAUL J. Gadbois has been promoted to the position of assistant division manager in the Long Beach Division.

Gadbois became associated with the George Beatty Directory Co. in 1948, transferring to the General Telephone Directory Co. in 1953. In 1953 he was promoted to the position of sales supervisor, and in 1958 he was appointed to the position of sales training supervisor. Since that time he has been responsible for sales training in the Western Region.

DC Power Supplies

A NEW catalog of DC power supplies, AC line voltage regulators, airborne radar power supplies, and static inverters and converters is available from Perkin Engineering Corp.

The fully illustrated catalog, No. E59A, includes latest MTR line of magnetic amplifier-transistor regulated DC power supplies which eliminate transients and transistor damage. Units described have wide use in electronic laboratories, guided missile ground checkout equipment and aircraft ground power supply applications. For your copy write *Perkin Engineering Corp.*, 345 *Kansas St., Dept. TE&M, El Segundo, Calif.*

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- STATION INSTALLATION
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- UNDERGROUND DUCT SYSTEM
- CABLE TRENCHING AND PLOWING

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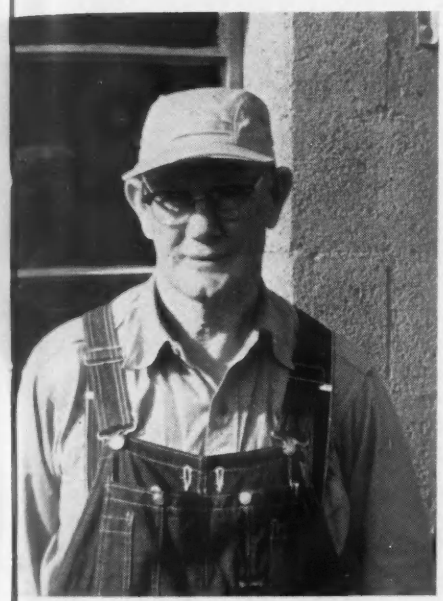
STROMBERG-CARLSON

Transmitter

A DIVISION OF GENERAL DYNAMICS CORPORATION

News and views of Independent telephone people. VOLUME 8, NO. 5 • August, 1959



"Great-granddad" Steven E. McGorder is third of hard-working trio which includes Mr. and Mrs. Glenn McGorder.

Stevey learns to dial on "butinski" held by granddad, Glenn McGorder, owner of Wyandotte Company.

New dial building for Wyandotte Tel. Co.

Who said:

"It couldn't be done"?

Eleven years ago, if you had said that to Glenn McGorder, president of the Wyandotte Telephone Company, about rehabilitating his newly acquired company, he would have been the first to admit that the odds *looked* in your favor.

"It was really a mess!" he recalled, describing his company, located in the northeast corner of Oklahoma.

At that time he had about 36 telephones — and only 12 of them were working!

"There were a lot of people here who wanted phones," he recollected, "so I decided to take a chance and try to put the company on its feet."

Five months ago he decided to convert to dial; a few weeks ago Mrs. McGorder pulled down the last cord from the manual switchboard before Mr. McGorder "threw the switch," converting this company from common battery to XY® Dial.

The eleven years between acquisition and cutover to dial were not wasted years for this progressive company and its hard-working president. In reminiscing, Mr. McGorder thought that the entire area served then would not have covered more than four blocks.

In expanding the company, Mr. McGorder climbed hills, cut away brush and established more lines, until today the company serves an area of 25 square miles, has 150 phones — all in good working order, and has 150 more people who want a telephone . . . easily served with the XY Dial equipment he now has.

"It was a slow process," he said, "but now we're on the right track." Without a doubt Mr. McGorder has proved it *can* be done!

Granddad and grandson share interest in new XY Dial equipment serving Wyandotte Telephone Co.

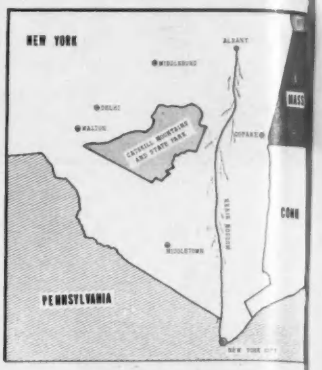
Mrs. McGorder pulls down last cord from old board at Wyandotte, Okla.

Advertisement

Late Spring Swing in So

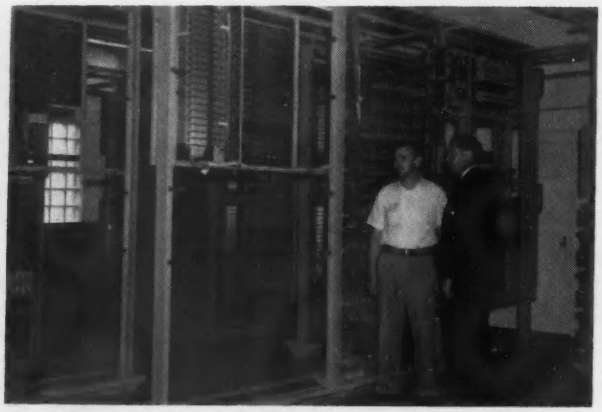
Part of our trip included a stop at Cooperstown, home of Baseball's Hall of Fame.

The Orange County Telephone Company's Commercial office is a busy operation; finds the 6K-1 System handy. We found this service representative talking with a customer.



Our trip took us through the famous Catskills.

Bill Trelease at Delhi points to areas served by XY Dial from Hamden office.



Ben Ackley, right, and Joe Raleigh in the XY Dial room at Pine Plains, one of the progressive exchanges of the Copake Telephone Company.

Originally this was a trip to cover a cutover — at Schoharie, N. Y. The temptation became irresistible to include calls on other companies; then a frantic plea from a collegian yearning to get home . . . "I just can't get all my bags and boxes on a train, let alone myself" . . . a re-examination of the XY installation map, with route changes to add more miles. The cutover was missed, but not the visit. The map shows the equally interesting stopovers.

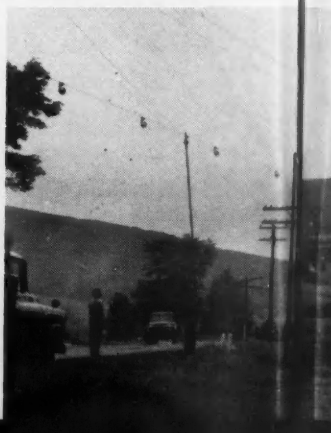
The oversized storm which swept me eastward had looked over my itinerary, liked it, and joined company for the entire first part. One can be a sport, and tell himself how lovely these mountains must be in early June, but you can't tell your camera to take what it can't see.

Delhi is a rare old cup held tenderly by these ancient mountains. County seat, center for surrounding "summer" areas, dairying region, home of New York State Agricultural and Technical Institute, it has grown carefully, preserving its charm while picking up today's stride.

The Delhi Telephone Company also has deep roots — back to 1897 and well managed by a family who makes

Busy toll board operators at Walton: Marjorie Boones, Patricia Van Loan, Mary Brooks, Jean Johnson and Chief Operator Beatrice Elderkin.

It was a nice day to be outsi
crew at Millerton thoroughly
putting up the new cable.



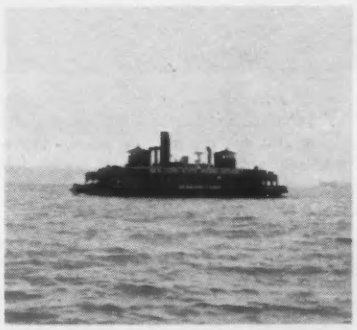
A perfect setting: a lake in the mist, surrounded by many deep green trees.

Advertisement

Southern New York State

Promotional-minded Orange County Telephone Co. at Middletown finds perfect place to sell colored telephones to color-conscious women. Entire window of large downtown department store was devoted to color fashions in clothes . . . and telephones.

Modern red brick building is not unusual sight in area where stone and wooden buildings, over a century old, still remain standing. This is the Downsville exchange of Delaware Co.



An enjoyable way to get to the other side of the Hudson River is the ferry at Newburgh, last one still running on the upper Hudson.

it their life. Mr. S. F. Adee established the company; his daughter, Miss Cynthia, and son Horatio have extended and improved the service continually. Showing a 300% growth in the last 30 years, with a probable further increase when Delhi itself goes dial, the company is vigorous — its management well esteemed. Its bookkeeping is handled on IBM cards, mailed and processed at nearby Binghamton headquarters.

Following the on-rushing Delaware River, it's a short downhill run to *Walton* — and a change in character from large town to small city. Interesting new industries such as plastic bowling pins and metal spinning (hub caps) have replaced the earlier trades related to the forests of their era. And every day the stainless steel milk trucks grind out the long round trip to the thirsty metropolis.

Here also the present company began and continues in the same family. Mr. Fred Haverly, after a fine background with the Southern New York Power Co., consolidated two small competitors into one strong organization — the Delaware Telephone Company. Vision and sound management started the rejuvenation which Mrs. Haverly and her sons have accelerated. Jack Haverly put through the original dial program, son Douglas will be carrying through the logical progression to customer toll dialing.

Office girls at Copake gave us a smile. Carolyn Hicks, Myrl Earl, Clarrissa Gentner, Lois Rockefeller and Eleanor Hoag.

Don't let the quiet country side or the old stone fort fool you. Independent telephone companies in Southeastern New York State are typically progressive businesses always ready to bring the best in service to its communities. "Dial in 1959" came true for Randall Beckers; XY Dial was recently cut over at Schoharie, serving the same valley where writer James Fenimore Cooper lived.

We learned that women's fashion cl

E. Scott Rose, president of the Middleburg Telephone Co., has over 35 years' service and is still active, as this photo proves.

General offices and dial exchange at Cepake.

Delhi still uses combination (manual) Switchboard, but is planning for dial for future growth.

The Haverlys, at the time their large XY Dial office and toll center was put in service, were among the first Independents to pressurize all their toll cables — now the accepted practice. Also this company was among the early users of Keysenders for nationwide inter-toll dialing.

Leaving Walton itself, my route over the hump separating East and West Branches of the Delaware River was mostly cloud breaking; the fine cable plant to the other exchanges at Downsville and Roscoe seldom were below ceiling. Someday I hope to *see* this beautiful country.

Middletown, N. Y. . . . . I had never been there before but had always thought of it as the modern city that it is — its business, its citizens, and the Orange County Telephone Company as symbols of a bustling, progressive present, rather than quaint, rural country cousins. It was reassuring to find my impression confirmed.

One little incident proved both the efficiency and the courtesy of the organization: within moments of my arrival, Mr. Lee Hunt, the general manager, had placed multiple calls over the 2-line and 6K office system to bring together three other busy men in the firm — Mr. Frank Fancher, executive vice president, Mr. Alton Bradner, plant manager, and Mr. Roy Miller, equipment manager.

These men carry on a proud company tradition . . . first to have dial at a time when larger cities north, east and south were still debating whether it was a "passing fancy;" customer toll dialing with electrical machine accounting. The residents are descendants of the men who sparked Middletown's ever-growing prosperity by persuading the Erie Railroad to run its main line through their town instead of an obviously more direct route. They have never waited for business to drift in, but actively seek the opportunity to grow stronger.

One of the best examples of current promotional activity was a huge, yet tasteful, display of Stromberg-Carlson colored telephones of all types, in cooperation with a leading department store's summer fashion window. It is regrettable that these pages can't reproduce the eye-stopping color that drew crowds — and orders — every day.

The hour and the weather prevented a visit to the large XY-PBX serving the State Hospital. But it did provide opportunity for an extended chat with Messrs. Hunt and Miller. While many, whose company has nearly 20,000 stations and averages 600 new customers per year, would feel that the job is pretty well in hand, the Orange County managers are constantly asking, "What else can

James Moore, equip. Sup't., Walton, attended XY School.

Progress at Middletown and other areas served by the Orange County Telephone Co. is responsibility of these men: Mr. Lee Hunt, general manager; Mr. Frank Fancher, executive vice president, using 1573 two-line telephone; Mr. Alton Bradner, plant mgr.; and Mr. Roy Miller, equipment manager.

Adve

clude colored telephones

we do . . . . how can we improve our services?" That's leadership!

New York, Connecticut and Massachusetts would each like to claim the lush intervale served by the *Copake* Telephone Company. Manager John B. "Ben" Ackley met me at the Pine Plains office — probably the only exchange in New York State to have full direct distance dialing with automatic digit identification, and just waiting for its neighboring toll center to permit customer dialing nationwide. The XY Dial system here has been expanded and will continue to absorb new subscribers.

In strong contrast was the exchange at Millerton, where principal effort is now being concentrated to prepare for converting this last manual office to dial. The work here has been complicated by major road construction projects, calling for moving a large portion of the total outside plant — a sufficient reason in itself for delaying the final stages of conversion.

From the attractive colonial-type headquarters in Copake, Ben Ackley and his father John D. Ackley — who celebrated his 50th anniversary with the company in 1957 and is still very active — keep continually on the move serving their 3200 customers. Further growth depends on the influx of commuters from Hudson and Poughkeepsie; the prosperity of the farms and the paper plants (blue print paper and cigarette wrappers). As it comes, the Copake Telephone Co. is ready.

After a short interlude of being a parent rather than a reporter, father *and daughter* headed toward the initial goal — *Middleburg* and the new XY Dial exchange at Schoharie. Pre-Revolutionary history — French, English, Indian and American — filled this entire valley, provided the grist for James Fenimore Cooper's "Leatherstocking Tales" and more recent novels of the winning of the "West."

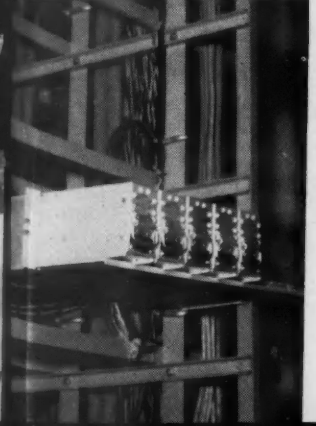
Like so many others, the Middleburg Telephone Company began (in 1897) with a doctor and a single line. It now comprises 5 exchanges, all dial with the June conversion of Schoharie, and about 2200 well-satisfied subscribers — testimony to the vision of Mr. E. Scott Rose, president, and the astute managerial ability of Randall Becker. These men realize that history rarely provides a living — their work is oriented to the present needs of thriving rural "Upstate."

Almost anyone who doesn't require metropolitan living could be happy in the pleasant Schoharie Valley. Just one additional reason is the final completion of the modern telephone system serving the area.

Green's Dept. Store, Middletown, showed buyers that telephones in color are fashionable too.

Mr. Douglas Haverly, manager, and his mother, Mrs. Cordelia Haverly, president, welcomed us at Walton.

We missed Miss Adee, president, and her brother Mr. Horatio Adee, vice president of Delhi Telephone Co. Mrs. Gordon Gilbert, secretary, was on hand to greet us.



Middleburg-Schoharie trunks find 541 Negative Impedance Repeaters keep levels up.

Schoharie Mayor Harold Warner, left, congratulates Randall Becker and E. Scott Rose, at cutover of Schoharie exchange.

"Let's celebrate this cutover"

Norman (Gabby) Gibbons, president and general manager for the Purdy Tel. Co., cuts XY Dial into service at Wheaton.

Norman (Gabby) Gibbons, general manager of the Purdy (Missouri) Telephone Company had the right idea in deciding recently to have an outdoor celebration during the cutover to XY Dial of the Wheaton exchange.

About 50 persons attended the mid-day cutover and were served an open air lunch by Mrs. Gibbons, Mrs. Kenneth Dodson, Mrs. Richard Seth, Miss Opal Lauderdale, Mrs. Harold Stouffer and Mrs. D. Stouffer.

Among those attending the cutover were representatives of neighboring telephone companies; the REA; Stromberg-Carlson; engineering and construction companies and employees of the Purdy Telephone Company: Col. Herron, McDonald County Telephone Co.; Fred Cartwright, Noel Telephone Co.; Byron Cook, Fairview Telephone Co.; Floyd Wilson, Pea Ridge Telephone Co.; Gormen Williams, REA Field Acct.; Wes Fordham, Stromberg-Carlson installer; Dale Stouffer and Harold Stouffer, Granby Telephone Co.; W. A. Miller, Southwestern Bell Telephone Co.; Wilma Marick, Blanche Alexander and Geraldine Hill, operators of the old manual board at Wheaton; and Kenneth Dodson, lineman-installer of the Purdy Telephone Co.

Chief Operator Geraldine Hill waits for one of final calls through old manual board.

Manager of the Wheaton exchange, Richard Seth, standing, and lineman Kenneth Dodson, make last minute check.

From the editor's mailbox . . .

Received word just the other day that Floyd Vetter, manager of the Central Mutual Telephone Co. is placing more and more two-line telephones in small-business locations in and around Manassas, Virginia.

We wonder if the recent cutover to Stromberg-Carlson Toll Ticketing at Manassas prompted local businessmen to use the telephone more. If so, a two-line telephone is the right answer to many a small-businessman's communication problem.

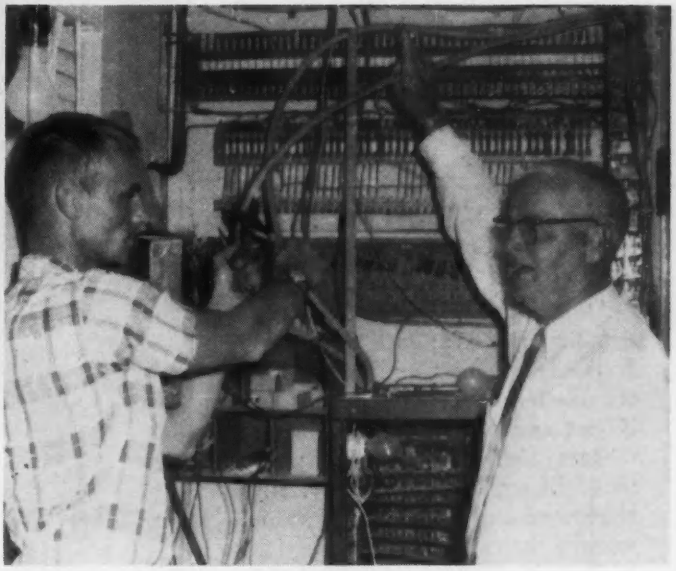
* * *

Observant Bill Huddleston, Stromberg-Carlson sales representative, couldn't help but notice that the new county license plate for Phillips County, Colorado, includes the letters XY. Is it a coincidence that all the dial exchanges in the county are XY Dial?

Serving the county are the Haxtun Telephone Co. and the Phillips County Telephone Co., which has its headquarters at Holyoke, Colo.

...ith an outdoor lunch"

After the successful cutover and delicious outdoor lunch, everyone posed for the photographer.



Richard Seth, left, and Harold Stouffer, cut off old magneto board.

Wheaton is the second of the company's exchanges to have XY Dial; Purdy, Mo., has been enjoying XY Dial service for more than two years. A new office building was also constructed at Wheaton to house the new dial equipment as well as the business office. Richard Seth is the manager of the Wheaton exchange.

Norman Gibbons, as president of the Purdy Telephone Co., has added two unusual "touches" to this cutover. One is the outdoor celebration; the other is something which he did first at the Purdy cutover more than two years ago. That was to give every subscriber an all gray dial telephone when new phones were being installed. A novel idea? Haven't heard a subscriber complain yet.

They served delicious outdoor lunch: from left, Mrs. Seth, Opal Lauderdale, Mrs. Gibbons and Mrs. Dodson; the children had fun too: Kimberly Seth, Jona Kay Gibbons, Susan Rene Gibbons and Michelle Ann Gibbons.

Enjoying lunch are Wes Fordham and Dale Stouffer while Gormen Williams, and Floyd Wilson, back to camera, talk about cutover.

Some guests found a shady spot: Byron Cook, Fred Cartwright and Col. Herron.

Toll Ticketing: A popular subject in Texas

Stromberg-Carlson Toll Ticketing specialists (instructors, that is) have been receiving enthusiastic welcomes in Texas as the Stromberg-Carlson Seminar on Toll Ticketing moves from city to city.

Recently the seminar attracted Texas telephone men to meetings at Conroe and Dallas. Conroe is the home of the Conroe Telephone Company.

Attending at Dallas, from lower left, first row are: Jack Harmonson, Justin Telephone Co.; Tommy Rickets, Western Tel. Service Inc.; John Blount and Carl Strandberg, Southwestern Bell Telephone Co.; Raymond Blagg, D. H. Dunaway, H. N. Hammond and T. H. DeHay, Southwestern States Telephone Co.; L. A. Wallace, Gulf States; and Carl Price, Stromberg-Carlson, Tyler, Tex.

Second row: N. Sewell, Wimer & Assoc.; Carl Dalhgren, Hollis Beane and Ed McDonald, REA Field Engineers; Jack Rutland, Southwestern States Tel. Co.

Third Row: Tommy Cole and Dee Cole, Quinlan Telephone Co.; Guy Smelser, Tommy Smelser, Charles Lewis and Kenneth Jeffers, Northeast Texas Telephone Co.; and Peyton Graham, Ragland & Hicks.

Fourth Row: John Bell (hands showing) and W. D. Lavender, Lancaster Telephone Co.; Cecil Cale and Clarence Johnson, Southwestern Bell; Lewis Bell, Gulf States Telephone Co.; E. H. Utzman, Southwestern States; Hiram Jones, Gulf States; Carl Lee, Southwestern States; Tom Odum, Merkel Telephone Co.; Jim Howell, Stromberg-Carlson, Brownwood, Tex.

Standing (all from Stromberg-Carlson): Bill Riley, Kansas City, Mo.; Richard Boyer and Robert Bankes, Rochester, N. Y.

Toll Ticketing Seminar at Dallas.

Toll Ticketing Seminar at Conroe.

Attending at Conroe, left to right, First Row: Pat Moore, General Manager, Navasota Telephone Co.; Marion A. Clay, General Manager, Lufkin Telephone Exchange and Conroe Telephone Co.; Morris Bateman, District Manager, Conroe Telephone Co.; C. P. Boaz, Jr., Southwestern Bell Telephone Co.; Jay Kersh and Edwin Kersh, Manager, Home Telephone Co., Humble, Texas.

Second Row: Ross Smith, President, and Rex Atkinson, Plant Manager, Livingston Telephone Co.; M. J. Harris, Chief Engineer, Lufkin Telephone Exchange; George Franks, Plant Manager, Navasota Telephone Co.; Robert Bankes, Richard Boyer and Bill Riley, Stromberg-Carlson.

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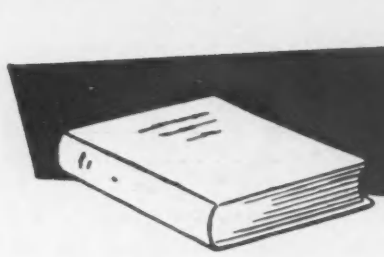

THE BACK OF THE BOOK

By JOHN G. REYNOLDS

Pickle Barrel Politics

JARRING political note for 1960 was sounded in July when the National Pickle Packers Association announced the birth of the "pickle and sandwich party" movement.

W. R. Moore, secretary-treasurer of the association, told reporters, "We're four-square for the U. S., brotherhood, pickles and more picnics." Backers of the movement plan to invade both the Republican National Convention in Chicago and the Democratic convention in Los Angeles. They'll distribute pickles as a reminder to delegates to nominate someone who will keep the nation out of a — pardon the expression — pickle.

Taxpayers' Paradise

MADISONVILLE, Ky., a town of 17,000, is a real taxpayer's dream. The only fees collected by the city are a $5 vehicle wheel tax and a small license tax on poolrooms, soda fountains and restaurants. Just recently Mayor David Parish and the city council agreed that for the sixth year in a row there would be no real estate tax.

How's it done?

"It's simple," says Parish, now serving his 14th year in office. "Madisonville owns its own electricity and water system. Both produce enough revenue to virtually finance the city's operations annually."

Garbage collections are free. There's a free municipal swimming pool, a public library and a free airport under construction.

Two huge signs over the north and south entrances proudly proclaim Madisonville *"The Best Town On Earth."*

"Friendly" Phone

MRS. KATIE Farrell of Montreal, Quebec, who celebrated her 100th birthday in July, looks on her telephone as a special companion that helps her keep in touch with friends. "There was a time when it was just a phone but now it is a friend," she said.

Failing eyesight has slowed her down somewhat this past year and she can no longer dial her own calls, but she puts many younger people to shame by memorizing her friends' numbers and simply asking the "nice Bell girls" to dial them for her.

One of the first telephone subscribers in Montreal, Mrs. Farrell remembers a time when many Montrealers had never seen a telephone. She loves to tell about the time she had a visitor's child in her arms when the phone rang. When Mrs. Farrell picked up the receiver the youngster's mother shrieked, "Look! She's trying to put the baby through that black hole!"

Pink or Blue?

OUR TEXAS correspondent tells of an installer who persuaded members of a local church to have a telephone in its nursery. The installer then sold the nursery supervisor on the idea of a colored phone. This posed a problem, however.

Should the new phone be pink or blue? To keep parents of both baby boys and baby girls happy, the installer proposed a diplomatic solution which was readily accepted. A two-toned telephone was installed — half pink and half blue.

Question Raiser

AN ENTERPRISING Texas repairman recently went out on the job sporting a badge with four shiny new pennies on it. Curious housewives were told, *"For just four cents a day, Ma'am, you can save steps with an extra phone in your home."*

"Frankly, Sir, I think he'll make us a good lineman!"

Lightweight, extremely pliable, made for all voltages, in all lengths—

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Linemen wearing new M-S-A Curved Finger Rubber Gloves work safer, faster, longer, and more comfortably than ever before. There's ample space now between the well-rounded lengths of the fingers. This new design principle practically eliminates finger fatigue. The standard color of these gloves is black. A special glove may be had that is molded with a caution color underneath which shows when the black top is worn down.

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Made to ASTM Spec. D-120, these curved finger rubber gloves increase wearer comfort and convenience without sacrificing safety or durability

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OUR DIRECTORY "Revenue Men"—working from 32 strategically located sales offices—providing the Independent Telephone Industry with a flexible and highly skilled telephone directory organization, are equipped to render a Complete and Quality Directory Service.

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